American Aviation

MANAGEMENT
ENGINEERING
PRODUCTION
OPERATIONS
MAINTENANCE
EQUIPMENT

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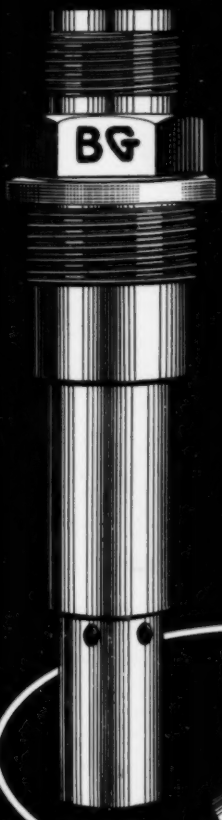

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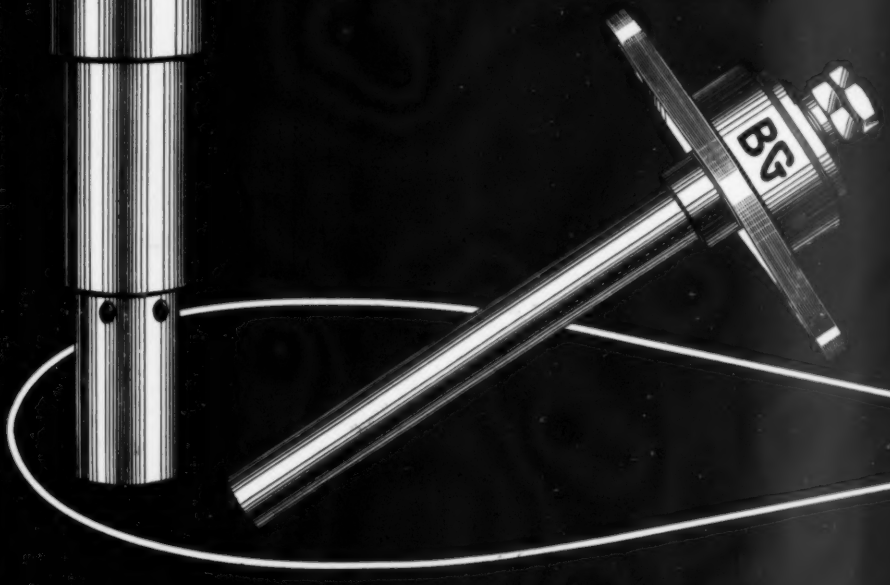

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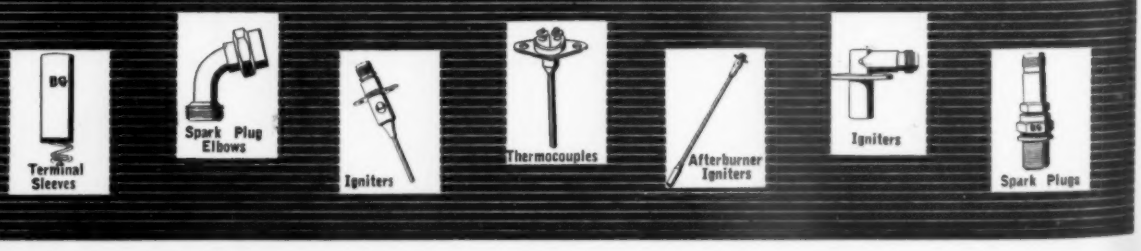

Despite superiority of present U. S. fighters over Russians, the hue and cry over complexity is leading to production of stripped-down combat aircraft.

USAF is reported to have ordered an experimental lightweight "air superiority" fighter (XF-104) from Lockheed. Northrup may be put to work on another. Britain's Folland Aircraft is building the light (6,000 pounds gross) delta-wing Gnat, powered by a French Turbomeca Ossau engine.

•

Joint bargaining attempt between five airlines and International Association of Machinists is being watched closely as possible basis for eventual industry-wide negotiations. It's the first such attempt in seven years.

Union favors joint bargaining because it wants uniform wage rates and working conditions throughout industry. Airlines might favor it because of possibility of quicker settlements, higher morale, better production during bargaining.

Reason only five carriers (United, TWA, Northwest, Capital, National) are presently involved is because they're the only ones with contracts expiring. Others could be brought in as negotiations come due.

•

Look for Germany's aircraft industry, when it gets going again, to concentrate on guided missiles.

Reasons: Germans will be restricted on originally-designed large aircraft (they may build some allied planes under license); market for transports is pretty well tied up. Facilities needed for missile production are less elaborate than those needed for military or civil aircraft.

Although top-level German missile technicians were taken over by U. S., Britain, and Russia, the working level know-how is still there. And western nations would probably turn back some technicians.

•

Key to more defense for fewer dollars will be found by Congress and top defense officials in the high priced reports made by reliable industry groups for the government and "buried" by military officers.

Item: The Stanford Report, which outlined ways of saving millions in training USAF pilots, mechanics and other technicians—getting a better, safer Air Force.

Item: The Harvard Report, which showed the way to cut supply lines in half, reducing spare parts costs by millions, permitting more planes at no increased cost.

These reports are classified and have been pigeonholed in the office of Brig. Gen. William P. Hudnell.

•

Two complete Comet washouts (Rome and Karachi) in only 12,000 operational hours, with similar causes, leads observers to wonder if anything will be done to correct the design.

Cause in both cases was given as excessive nose-up attitude on take-off. This also points up tiff that deHavilland has been having with Fred Lee, acting CAA Administrator, who commented on Comet's flat climb. Manufacturer answered that "angle of climb is considerably better" than propeller-driven craft.

•

Despite past Congressional cuts in Air Force public information funds, the AF isn't exactly suffering.

It has 74 military and civil public relations personnel, including 19 officers and 15 girls in Washington. And at bases here and abroad, there are 726 people who devote 18% of their time to pubrel.

The Washington View

Squeezing Out the Water

Cancellations, cut backs, and new stretch-outs in Defense Department procurement are the order of the day in Washington. Malenkov's "Peace Offensive" is the latest factor adding fuel to the efforts of economy-minded Republican leaders, including Defense Boss Charles E. Wilson, to cut spending to the hard core.

Significant signpost: Rep. John Taber's House Appropriations Committee has already raised the budget reduction goal to $8 billion from defense funds. This contrasts with estimates of the armed services that $4 billion is the outside limit for an overall reduction and that even this would require realignment of their procurement programs.

Deputy Defense Secretary Roger M. Kyes is the key man working between Wilson and the individual services on budget cuts. He is putting the pressure on and is getting the desired results.

After a series of four consultations with Air Force planners, Kyes is said to have squeezed $2 billion from their budget. He did this by demanding an additional half billion dollars each meeting. Air Force is protesting loud and long. Chief of Staff Gen. Hoyt S. Vandenberg is now reported trying to get a commitment from Wilson on a budget for *minimum* Air Force requirements which would be supported before Congress to avoid any further cuts.

The USAF Knuckles Under

It remains to be seen whether the Air Force won a complete victory in its successful efforts for repeal of the legislative ban on operation of the Tullahoma research center by ARO, Inc., beyond March 31. Opposition in the Senate, led by Sen. Albert Gore (D., Tenn.), was withdrawn only after the Air Force knuckled under to an agreement calling for the strictest of terms in negotiating a new contract.

ARO may well hesitate before signing on the terms to be proposed. Key to the proposal is that an actual dollar fee is to be reached, taking into consideration return on capital investment. ARO is capitalized at $150,000. On such a basis alone, there appears no alternative but a substantial reduction in fee. Expectation is that the new contract terms will provide no more than 50% of the previous highest fee.

On the contract for the 12-month period ending September 30, 1952, ARO received a fee of $95,000, and for the six months ending March 31, 1953, received $55,000. If ARO comes to terms with the Air Force at half the fee it formerly got, the question is raised: will the preceding years' contract be renegotiated to determine the reasonableness of the fees charged?

Will Radford Head the JCS?

Pentagon sources now concede that Admiral Arthur M. Radford has the inside track to become chairman of the Joint Chiefs of Staff. Added significance pointing to Radford as the man for the job is the latest report that he is to be relieved of his Pacific command in June with orders to report directly to Washington.

Nonetheless the Air Force is still pinning its hopes on Gen. Hoyt S. Vandenberg, retiring Chief of Staff, to move up. Vandenberg has indicated that he has no desire to retire. Original drawback to his taking the chairmanship was his health, but full clearance from the medical authorities put him back in the running.

The field for successors to Vandenberg in his top Air Force post is seen as rapidly narrowing down. Leading candidate is considered to be Gen. Nathan F. Twining, Vice Chief of Staff. Alternate being mentioned is Lt. Gen. Thomas D. White, Deputy Chief of Staff, Operations.

Out Goes the OT

Secretary of Commerce Sinclair Weeks' action in wiping out the department's Office of Transportation had more than a touch of irony in it. For the same order that eliminated the one unit assured the continuance of another —the Defense Air Transportation Administration.

It was ironic in that even as the death blow fell the Office of Transportation was maneuvering to absorb DATA . . . still angling for another step in a bureaucratic empire build-up that had been going on within OT ever since its creation less than three years ago. Close observers have long held to the opinion that there never was a real need for the 25-man OT. That it has been ineffectual is pointed out in the lack of production, action or results.

Demise of the Office of Transportation does not effect the user charge study which came under its jurisdiction. The study was finally completed and a report is expected to be soon released by Robert B. Murray, Jr., Under Secretary for Transportation. Former functions of OT will be undertaken by a small staff at the direction of a new special assistant to Murray.

Thus one man and a small staff emerge in a streamlining that is predicated on the elimination of waste and inefficiency.

. . . Preble Staver

TIME WAS when planes were either grounded whenever icing conditions occurred, or ran the risk of crashing if they flew.

Old-time pilots, faced with the hazard of wings and props "icing up" during flight, were forced to descend to warmer altitudes in an effort to thaw and "shake off" the dangerous ice formations.

Many devices were tried, then Goodyear—working with the National Research Council of Canada—developed the Electro-Thermal Iceguard . . .

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OTHER PUBLICATIONS . . .

American Aviation Daily, a daily news service for the entire industry. $300 per year. Managing Editor: Keith Saunders.

American Aviation Directory; twice yearly listing of products, people and organizations. $7.50 each. Managing Editor: Marion E. Grambow.

Official Airline Guide: Monthly publication of airline schedules and fares. $11 per year in USA and countries belonging to Pan American Postal Union, including Spain and the Philippines. $12.50 elsewhere. Published from 139 N. Clark St., Chicago 2, Ill. Central 6-5804. Managing Editor: Robert Parrish.

American Aviation Traffic News (incorporating Air Tariff Reports): Daily rates and tariff news. $150 per year. Managing Editor: Wallace I. Longstreth.

When & Where

Apr. 16-17—Radio Technical Commission for Aeronautics, Spring Meeting, Wardman Park Hotel, Washington, D. C.

Apr. 18-19—Air Force Association, California Wing Convention, Hotel Manor, San Diego, Calif.

Apr. 20-22—Northwest Airport Management Conference, Eugene, Ore.

Apr. 20-24—SAE, Aeronautic & Aircraft Engineering Display, & Aircraft Production Forum, Hotel Governor Clinton, New York.

Apr. 28-30—Air Traffic Conference, Edgewater Beach Hotel, Chicago.

Apr. 29-May 1—AIEE-IRE Electronics Components Symposium, Shakespeare Club, Pasadena, Calif.

May 6-7—Women's National Aeronautical Association, 2nd Annual Skylady Derby, Fort Smith, Ark.-Memphis, Tenn.-St. Louis, Mo.-Fort Smith.

May 8-10—Oklahoma City Air Fair, Will Rogers Field, Oklahoma City.

May 10-17—Virginia Aviation Jubilee. Air Exhibition, Byrd Field, Richmond, Va., May 16 and 17.

May 11-13—IRE National Conference on Airborne Electronics, Dayton Biltmore Hotel, Dayton, Ohio

May 14-15—Sixth Annual Wisconsin Aeronautics Conference, Hotel Wisconsin, Milwaukee.

May 14-17—9th Annual Forum, American Helicopter Society, Mayflower Hotel, Washington, D. C.

May 17—National Air Carnival (Armed Forces Day), Municipal Airport, Birmingham, Ala.

May 18—National Fire Protection Assn., Aviation Seminar, Palmer House, Chicago.

May 18-22—5th National Materials Handling Exposition, Convention Hall, Philadelphia, Pa.

May 19-22—ATA Operations Conference, Park Plaza Hotel, St. Louis, Mo.

May 19-23—Aviation Writers Association, Annual Convention, Dallas, Texas.

June 6—4th Annual Maintenance & Operations Clinic, Reading Aviation Service, Inc. Municipal Airport, Reading, Pa.

June 7-12—SAE, Summer Meeting, Ambassador & Ritz-Carlton Hotels, Atlantic City, N. J.

International

Apr. 20—IATA, 6th Technical Conference, Puerto Rico.

May 14-22—FAI Conference, Scheveningen, Holland.

June 16—ICAO Assembly, Brighton, England.

June 26-July 5—Int'l Aircraft Engineering Convention, Paris; and Int'l Aircraft Show, Le Bourget Airport, Paris, sponsored by French Aircraft Industries Association.

Aug. 25—ICAO, Legal Committee, Rio de Janeiro.

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Letters

QUESTIONABLE

To The Editor:

My attention recently focused on a questionable lambaste of industry safety tactics by Mr. Ben Howard in your March 16 edition. I certainly have increased my respect for the I.A.S. by their finding that his article was unacceptable for presentation at the annual meeting in New York.

In the past years of aviation there have been repeated attacks on the progress that aviation has made in this country. These attacks or official presentations based on unofficial or purely personal conclusions as to the causes and effects of various incidents in aviation, accomplish one thing: loss of confidence in the U. S. aviation industry and its associates.

Mr. Howard, in this particular case, with surprising lack of regard for unslanted facts but, as he says, "with good intent," has presented a picture of airline transportation which if applied to the automobile industry would have us back to the horse and buggy.

Let's use his graph of accidents versus flight distance and using "accidents per 10,000 miles driven" as the ordinate and "drive distance" as the abscissa compare the horse-and-buggy with the automobile. The data on my graph need not be construed as factual but it represents my guess as to accidents/drives. It is very easy to see how foolish we people are to be driving automobiles instead of the horse-and-buggy which is shown as better than ten times safer. (Maybe we are!?)

Using another graph too simple to bother with an illusion, compare fatal accidents for a ten year period for horse-and-buggy and the automobile and either use a very long piece of paper (for the automobile of course!) or throw out the automobile because of the graph limits.

Let's take a look at the records exactly as Mr. Howard suggests in his opening paragraphs rather than by looking at the disassociated graph which, although showing the conclusions he has formed, does not conform to his suggested method of presenting an equation of safety: he suggests looking at the accident rate on the basis of "loss per unit of exposure to crash" and "95% (are) the result of the flight having been made." On this basis, his graph may be closer to one straight line for the three types of aircraft he has chosen; accidents per flights will probably not vary much between plane models over a long period of time or at least a period of time adequate for proper presentation of fact.

Noteworthy in Mr. Howard's article, he did mention—in fine print—that fatalities per unit of exposure have been reduced by "less than 10%." Many people who were responsible for this step up the ladder of safety are thus condemned because it was less than 10%, while a commendation would offer encouragement for greater safety progress and instill greater confidence in our entire industry.

I fail to see the consistency of Mr. Howard's remarks when on one hand he slants the picture toward DC-3 safety over that of the DC-4 and Constellation and on the other hand berates various items on the latter two aircraft from a safety standpoint when these items are also prevalent on the DC-3, such as the "No Smoking" sign, combustion heaters, gasoline in the wing, etc.

In regard to the two crashes due to premature flap retraction, Mr. Howard claims these could have been prevented by decreasing the rate of flap retraction or by a time delay in the flap retraction circuit. Could Mr. Howard venture a guess as to the number of accidents that could be caused by delaying flap retraction time in the case of a balked landing with one engine out; by the design and operational complications of a delayed retracting device coupled with a fast extension device; or in the absence of this complication, by the delayed flap extension?

I have tried to keep this letter to a minimum but find it difficult to do so. It seems I am far more optimistic than Mr. Howard concerning the progress U. S. aviation has made and is making in regard to safety. The road is a long one and made rougher by the increasing complications brought about by higher speeds and altitudes and higher pay loads. The end of the road certainly is not in sight and may never be in sight, for who is to determine how safe is safe?

Maybe Ben wrote his article primarily to arouse the ire of various engineers in the industry so that they are forever extremely conscious of that word "safety."

ART DROGE

CAA Region One
Powerplant Engineering

XHJD-1 WHIRLAWAY, with two 450-hp engines, was designed as a research helicopter by McDonnell Aircraft, and first flew on February 22, 1946.

TWIN-ENGINE 'COPTER

To The Editor:

From AMERICAN AVIATION "Letters," 2 March, 1953, pages nine, 74: ". . . In fact, at least one such machine [multi-engine helicopter] is flying successfully in England, and several are in the prototype design stage, both in this country and in Europe, proposing both piston and turbine engines" . . . C. M. Belinn, president, Los Angeles Airways, Inc., Box 10155, Airport Station, Los Angeles 45, California.

I'm sure this was an unintentional oversight on Mr. Belinn's part, but just for the record, see photo.

JACK SHEA

Manager of Public Relations
McDonnell Aircraft Corporation
Box 516
St. Louis, Missouri

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STANDARD ANNOUNCEMENTS

To The Editor:

Your very amusing, but unfortunately true article, "Terminal Audience Gets Ear Bent, Broken" in the March 2 issue of AMERICAN AVIATION pointed to an annoying practice which has been a particular source of irritation to me and must be a great source of irritation to the traveling public in general. However, it is surprising that you did not note the outstanding exception, the Los Angeles International Airport.

Public address at the L. A. airport is handled for all airlines by an efficient, capable staff of trained girls. The p. a. room is located in a small office completely separated from the terminal, and from the noises and urgency related to the airline counters. Standard announcements for practically every situation from arrivals and departures to illegal parking have been written out in full, and must be followed. No other announcements may be made without special authority.

Unless you are listening for a particular announcement, these well modulated, well trained voices that make the announcements at the L. A. airport will neither interrupt nor irritate. Take special notice of our system the next time you are in Los Angeles, and see if you don't agree.

BILL COSTIGAN

TWA Transportation Agent
Los Angeles International Airport
Los Angeles, Calif.

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STATE CELEBRATIONS

To The Editor:

With reference to the question, "Wherizzit?" in your March 16 editorial of AMERICAN AVIATION, I am forwarding you a recent memo I sent to all states. This memo included only three of the seven Cleveland aviation events scheduled for the first six months of 1953. Other cities are becoming interested and active.

I feel, as I am sure you do, that the state promotion aid kits recently sent out by the National Committee will do much to stimulate community and organization action. The county fair exhibit idea is already showing great

(*Continued on page 58*)

TV Tube Maker puts Production Line in Distributor's Backyard

How CBS-Hytron found a new, economical way to improve service and reduce inventories

CBS-Hytron...a division of CBS, and one of the country's foremost producers of TV picture tubes... faced a twin problem. With demand pushing supply, how could they step up service to distributors and dealers throughout the country. And at the same time avoid costly warehousing.

In American Airfreight, they found the solution. Today, CBS-Hytron TV tubes are shipped by air in record time. Deliveries are fast. Distributors no longer need carry excessive inventories. Stocks are up-to-date. The right tube is at the right place at the right time. And this extra service costs CBS-Hytron distributors and dealers not a penny extra.

Here's another case where the money-saving results of airfreight more than offset its initial cost. Why not learn what this modern method of distribution can do for you?

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AMERICAN AIRLINES INC.

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Editorial

Off to a Good Start

THINGS ARE LOOKING UP for the Air Force. Secretary Harold Talbott is proving that he can be a hard-boiled administrator. Under Secretary James Douglas is an able lawyer with a broad grasp of AF needs. The latest encouraging sign is the nomination of Roger Lewis as Assistant Secretary in charge of procurement. An able hard-hitting team is shaping up.

by W. W. P.

Lewis is the first man from industry ever to be placed in charge of procurement and it is understood he will also have in his charge off-shore procurement, communications, civil aviation, and other vital matters. His background with Lockheed, Canadair, and more recently at Curtiss-Wright should stand him in good stead.

No immediate drastic action can be expected. No miracles are to be performed. But over a period of time the Air Force should undergo considerable streamlining, attain more efficiency, and perform a better public relations job than it has in the past. The 32,000-employee Air Materiel Command at Wright-Patterson Field will be whittled down in time. Money will be saved in the interests of more working, practical air power. The AF outlook is good.

Tourist Becomes Standard

The new timetable of Swissair illustrates better than anything else we've seen how low-fare tourist services have taken over the bulk of air service in Europe. Out of the many operations of Swissair to all parts of Europe there is only one first class flight remaining—a daily Convair service between Zurich and London. On the Atlantic Swissair is operating one first class flight and four tourist flights weekly.

Air France has converted virtually all of its internal and North African services to tourist class and has gone heavily into this class for much of its European operations.

All this bears out earlier forecasts that low-fare tourist service is to be standard service and the former standard service to become de luxe. This is why the seating capacity, safety, and economic factors have been so important in determining the makeup of tourist (or coach) class service. Once tourist becomes standard there are no further beneficial changes to be made either in fare reductions or in adding seat capacity unless the over-all costs of operating can be reduced, an unlikely prospect at the moment.

We suspect that some such consideration was back of United Air Lines' balking at utilizing the maximum capacity for coach services *now*. If coach is to become *standard*, should comfort and safety be reduced to the *absolute* minimum or should there be the type of reasonable minimum which one gets in railroad coaches? In any event, the present standard of tourist (or coach) service is now an established pattern in both the United States and in Europe, and the die is cast.

While Safety Waits

For want of a $79.20 transformer and a modest amount of common sense the VHF-DF installation at the Pittsburgh (Pa.) control tower was inoperative from mid-February to the end of March. During these five or six weeks air traffic in the area was held up an average of five times per week because of "lost" airplanes. An airline is reported to have dropped as much as $20,000 a day in curtailed operations because of this condition.

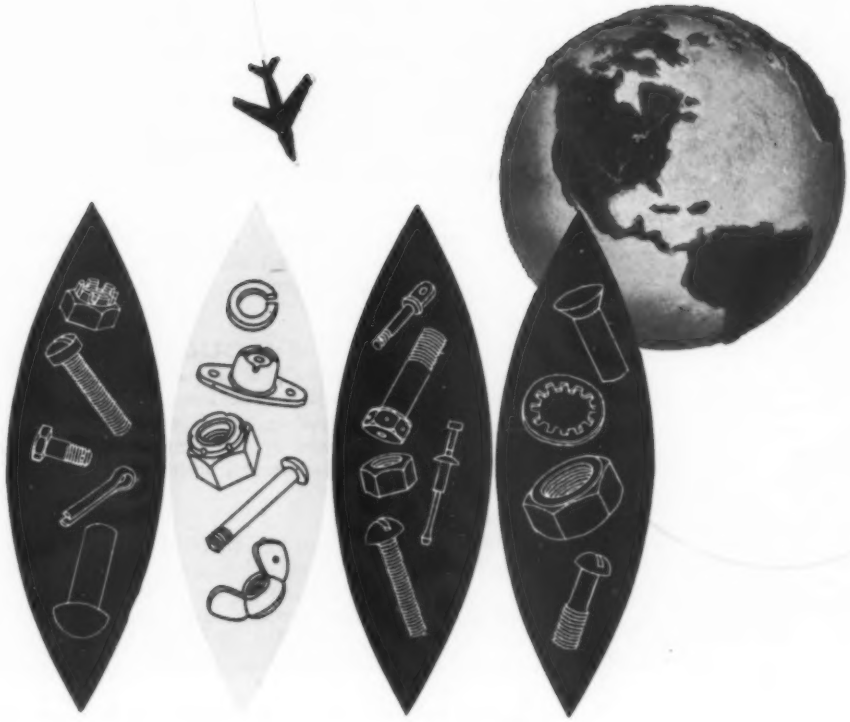
Cause of the disruption? Three years ago the CAA borrowed the installation from the Air Force and persuaded the military to agree to maintain it. When the transformer failed in mid-February the Air Force made a real effort to get a new transformer but was unable to overcome a multitude of red tape delays. Meantime the CAA washed its hands of the matter and sat back, until finally the CAA First Region condescended to purchase the $79.20 transformer, provided the carriers would show strong justification for the expenditure. CAA also warned that it wouldn't again maintain military equipment with CAA funds even though it was operating the equipment.

This sort of situation needs straightening out. We were under the impression that airways traffic control—and safety—belongs to the CAA. What kind of economic and safety responsibility is involved over a $79.20 transformer anyway? We hope new CAA Administrator Fred Lee will not lose time replacing petty jurisdictional arguments with common sense.

Try It Again

Now that the Airport Operators Council and the American Association of Airport Executives got their collective feet wet meeting in the same city at the same time, as they did March 23-26 at Kansas City, we hope they will try it again. Certain conflicts can be eliminated, the exhibits and displays can be better organized, jokes in bad taste at the joint banquet can be avoided, and all can profit by a common meeting place. It was a good first try.

. . . WAYNE W. PARRISH



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Industry Spotlight

First turboprop-powered aircraft to be tested as an aerial refueling tanker will be the Convair XP5Y-1. Plans call for installing three refueling points on the Convair boat, including one at each wing tip and the third at the rear of the fuselage. This will give the services tanker experience with piston engines (KC-97's), jets (KB-47's), and turboprops.

•

Agreement between Pratt & Whitney and the U. S. Air Force for production model T-34 turboprop engines set a price of $175,000 each on the first 100 engines, $150,000 for the next 100 engines, with the price finally stabilizing at around $120,000 each. These are the 5500-horsepower versions of the T-34, such as are programmed for the Douglas C-124B and A2D Skyshark.

•

Federal Telecommunications Laboratories' short range navigation system, which was demonstrated recently at Pautuxent Naval Air Station, is the hottest thing to hit the electronic navigation industry for a long time. Providing both bearing and distance information, the FTL system is in theory a tactical requirement and has not been officially discussed with the Air Coordinating Committee. In fact, the FTL 1,000 megacycle may make obsolete current civil thinking and spending for distance-measuring equipment.

•

The production model of the C-124B, turboprop version of the Douglas C-124, will be virtually a new airplane and may actually have a new USAF designation. The front clamshell loading doors will be replaced with tail loading, which will force a complete new tail design. The plane, powered by four Pratt & Whitney T-34 turboprops, will have higher gross weight, beefed up wings and landing gear, and other changes.

•

Pratt & Whitney will not put the R-2180 back into production, company officials state. Industry reports to this effect were prompted by P&W's loan of earlier R-2180's to Piasecki for testing in one prototype helicopter. SAAB has been very interested in getting the company to put the engine back in production to permit more Scandia production, but there is no consideration being given this now.

•

Remmert-Werner, Inc., at Lambert Field, St. Louis, has developed a modification of the Pratt & Whitney R-1830-92, which it is calling the Super-92, which makes it possible to cruise the engine at 700 horsepower, getting up to 20 miles per hour higher speed out of Douglas DC-3's. Engine uses crankcase and carburetor system of the -92 engine with the high dome, split boss pistons, and the cylinders of the R-1830-75 engine with better cooling. The Super-92's now have over 200 hours flight time each.

•

Allison's J71 engine, currently developing about 9200 pounds thrust, is being readied for flight tests in a North American B-45. Installation is a retractable one, with the engine retracted into the bomb bay except during testing.

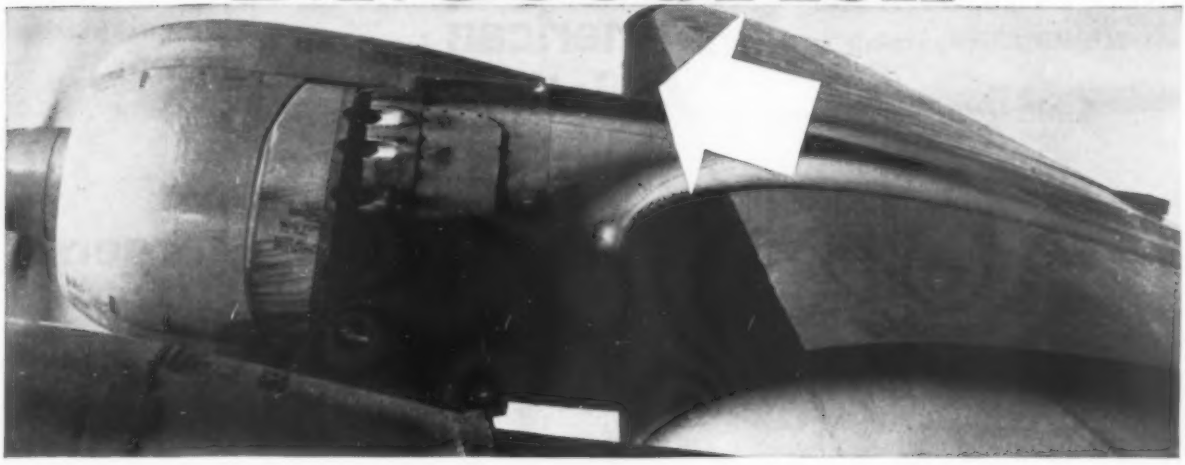
•

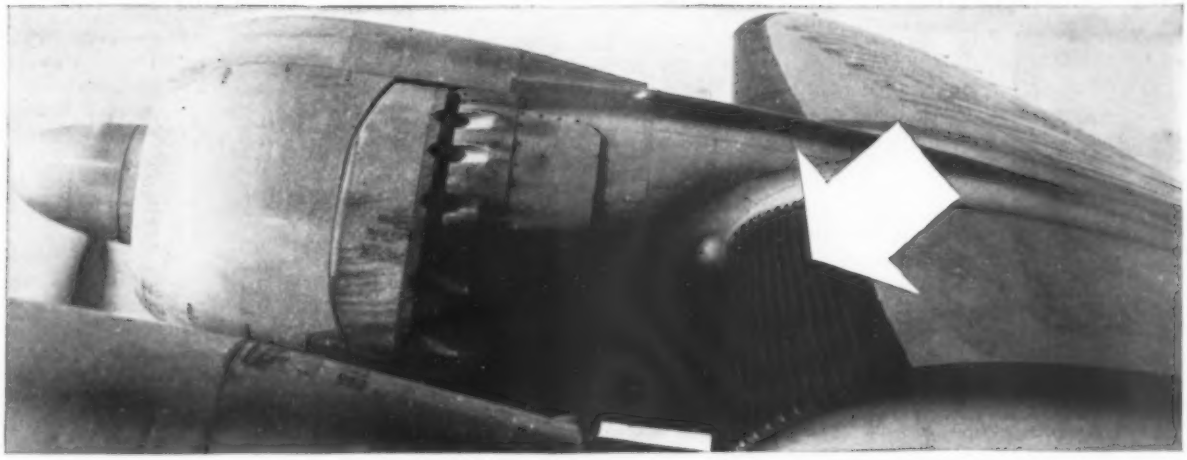
Convair's supersonic bomber, designated the XB-58, is a delta-wing design powered by four Pratt & Whitney J57 engines. Engine installations are understood to be buried in the wings. The long thin fuselage has a needle nose. While top speed is about Mach 1, normal cruising will be just below this speed.

•

Proposed $26 million titanium production plant, which Crane Co. would build near Nashville, providing a government loan is forthcoming, would probably make the firm the largest producer of titanium sponge in the U. S. Plant would turn out 6,000 tons of titanium sponge per year, compared with 992 tons by all firms last year. If immediate go-ahead is received production would be under way in 12-18 months.

B.F.Goodrich





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VOLUME 16, NUMBER 23

New Industry Giants Shaped by Mergers

CONVAIR-CANADAIR MERGER . . .

ONE OF THE LARGEST aircraft industry deals in many years has been consummated with the agreement of Atlas Corp. to sell a 17% interest in Consolidated Vultee Aircraft Corp. to General Dynamics Corp., giving the latter the largest single block of stock among the 2,400,000 shares outstanding. The purchase will bring about an alliance between one of the largest aircraft manufacturers in the U.S. with the number one aircraft company of Canada, Canadair, Ltd., a subsidiary of General Dynamics.

Hopkins

Sales price of the stock will be $8,700,000 in cash, plus 20,000 shares of original issue common stock of General Dynamics. Atlas Corp. will retain 30,300 shares of Convair and will, of course, have an additional interest in the company through the General Dynamics stock it is acquiring.

Final approval of the deal is expected at the annual meeting of Convair stockholders, which will be held in the latter part of May, at which time it is expected that John Jay Hopkins, chairman and president of General Dynamics, will be elected chairman of the board of Convair, succeeding Floyd B. Odlum, president of Atlas.

That is the only top personnel change now contemplated, however, except for a planned increase in board membership from 12 to 18. Hopkins emphasized that the stock purchase "will not interrupt the continuity of policy and management at Convair." Gen. Joseph T. McNarney will continue as president of Convair and his operating management staff will remain.

Speaking for Atlas Corp., Odlum said that the Convair sale was a logical one, in view of Atlas' policy of moving into businesses which are on the decline, rebuilding them, and then moving on to new challenges.

For the year ended November 30, 1952, Convair had a net income of $10,426,476 on sales of $391,314,144. The backlog was "in excess of $1,000,000,000." General Dynamics earned $4,917,176 on sales of $134,551,610 for the year ended December 31, 1952, at which time its backlog stood at $372,000,000.

A breakdown of Canadair's sales and income is not available due to a company policy of not breaking down financial statements by divisions, but Canadair is the largest of General Dynamics' three divisions.

Convair, with plants in San Diego and Pomona, Calif., and Fort Worth, Tex., has a wide variety of production work. It is still turning out 10-engine B-36 bombers for the Air Force at Fort Worth and is starting production on the new USAF F-102 delta-wing, all-weather fighter at San Diego.

The Pomona plant is in production on guided missiles. Production is also scheduled at San Diego for two Navy planes—the four-engine turboprop R3Y flying boat transport and the XF2Y-1 Sea Dart water-based jet fighter.

In addition, the company has substantial orders for San Diego production of the 340 Convair-Liner and its military counterparts, the T-29 trainer and the C-131 evacuation transport, both Air Force planes.

Canadair is in production on three American plane types—the Lockheed T-33A jet trainer, the Beech T-36A trainer, and the North American F-86 Sabre. In addition it is manufacturing spare parts for Douglas DC-3's and Canadair DC-4M's. Production was also scheduled for the Bristol Brittania, but it is not known what effect the General Dynamics-Atlas deal will have on that program.

THE FLYING TIGER LINE—

The nation's two largest all-freight airlines—The Flying Tiger Line and Slick Airways—have signed a merger agreement and submitted it for Civil Aeronautics Board approval. Flying Tigers would be the surviving corporation under the deal, with FTL president Robert W. Prescott heading the merged firm.

Prescott

Both lines hold CAB-issued temporary all-cargo certificates which come up for renewal August 12, 1954. They would merge under a stock exchange plan of one-half share of FTL common stock plus one share of a new issue of preferred stock for each full share of Slick common stock. Exchange value placed on the Slick stock (about 450,000 shares) is $6,750,000.

Both Prescott and Slick president Thomas L. Grace, who will be executive vice president of the merged company, claim the Flying Tiger-Slick combine would become the nation's fifth largest domestic airline with a total capitalization in excess of $13 million and an annual business volume ranging between $45 and $50 million.

The combined fleet of the merged firm will consist of 11 DC-6's, 50 C-46's, and 10 DC-4's.

The joint company will maintain Flying Tigers' corporate name but will operate as "Flying Tigers-Slick Airlines." Area-type certificates of the airlines generally authorize operations from the west and southwest through the Chicago area to the east coast. (See map on page 17.)

The proposed company will have a 15-man board of directors made up of nine from Flying Tigers and six from Slick, with Samuel B. Mosher, current FTL board chairman, serving in the

• Canada and U. S. linked as Canadair, Convair join forces.

• Aviation leader may result from auto firms' merger.

• Fifth largest domestic carrier produced by Tigers-Slick combination.

SLICK AIRWAYS MERGER . . .

same capacity with Flying Tigers-Slick. In addition to Prescott, Mosher, and Grace, other directors will be Allen T. Chase, J. E. Davidson, Norman L. Meyers, Houston Rehrig, Robert L. Smith, T. J. Sullivan, and William Zeckendorf, all current FTL directors; and Samuel R. Milbank, William E. Miller, Lewis Moorman, Jr., Earl F. Slick, and James H. Smith, all current Slick directors.

Objectives of the merger according to officials are:

• **Elimination** of duplicating facilities at many major terminals, such as New York, Boston, Philadelphia, Chicago, Detroit, Cleveland, Los Angeles, and San Francisco;

• **Consolidation** of maintenance operations;

• **Integration** of duplicate flight patterns;

• **Ability** to concentrate equipment at major terminals in the handling of heavy freight volumes.

These advantages, Prescott told AMERICAN AVIATION, should lead to better service, lower rates, and "a much more stable company producing better earnings."

The stock transfer transaction will require the issuance by the Flying Tigers of approximately 225,000 additional shares of common stock and 450,000 shares of a new series B 5½% convertible preferred with a $10 par value. The Flying Tigers have outstanding 754,452 shares of common stock. Additionally the Tigers have 99,112 shares of series A 5% preferred stock outstanding, and 2,746,000 5½% convertible debentures, but these securities do not enter into the stock exchange.

Slick has an authorized capital consisting of one million shares of common stock with par value of $10 each, of which 422,152 shares are now issued and outstanding.

KAISER-WILLYS MERGER . . .

WHEN common stockholders of Willys-Overland Motors vote April 24 to authorize the sale of their stock to Kaiser Manufacturing Corp. for an estimated $62.3 million, a vote at which no opposition is expected, it will create not only a new giant in the automotive industry but also a potentially leading firm in aircraft as well.

Canaday

The acquisition of Willys by Kaiser-Frazer Corp.'s wholly owned defense-products subsidiary and the evolution of the resulting company, to be known as Willys Motors Corp., will serve to combine the electronics and guided missiles activities of the two firms.

Willys Motors will probably be headed by Ward M. Canaday, president and chairman of Willys-Overland, while R. R. Rausch, Canaday's assistant, is slated to be executive vice president.

Exact aviation backlog of the two firms is not yet known, but Kaiser Manufacturing has approximately $500 million in prime contracts and subcontracts. Willys-Overland's total defense backlog is reported at about $250 million, but a good portion of this is for jeeps and other military vehicles in addition to jet engine parts, forgings, electronics, and landing gear.

The accumulated aviation know-how of Kaiser Manufacturing and Willys-Overland should go a long way towards keeping the Kaiser organization among the top aviation firms.

Since the Henry J. Kaiser Co. has a 49% interest in Chase (the remainder held by Chase Vice President Michael Stroukoff) and since this holding may be purchased by K-F at any time in the future for the original purchase price plus interest, it is obvious that the Kaiser organization has no intention of getting out of the airplane business after the present airpower buildup ends.

Even without the interest in Chase, however, K-F seems certain to be an aircraft industry fixture because of its present contracts and those of Willys-Overland. At present, for example, Kaiser Manufacturing has the following aircraft projects under way:

• **Willow Run** is turning out Fairchild C-119's and is scheduled to get going on the Chase C-123B subcontract in September.

• **The San Leandro, Calif.,** facility is producing Boeing B-52 components.

• **Lockheed P2V-5 parts** are being built at Richmond, Calif.

• **Wright-licensed R-1300** engines are in production at Dowagiac, Mich.

• **Kaiser-Sanders Division,** Nashua, N. H., is engaged on military research and development work on electronic equipment.

Simultaneously, Willys-Overland is doing the following aircraft work:

• **J47 parts** at the Aircraft Engine Division in Anderson, Ind.

• **Missile trainers** for the Martin B-61 and missile control system components for Bendix at the Electronics Division in Anderson.

• **Landing gear** for the Kaiser C-119 and Beech T-36A at the Landing Gear Division in Toledo.

• **Jet engine parts** at the Drop Forge Division in Toledo.

• **Aircraft engine parts** at the Aluminum Drop Forge Division in a Government-owned plant at Erie, Pa. This facility will probably be sold to Kaiser Aluminum and Chemical Corp., which will operate other aluminum forging and extrusion presses for the USAF at Newark, Ohio, and Halethorpe, Md.

The Kaiser organization is also engaged in one other aircraft project—turning out components for the Martin B-57A and Republic F-84F at Kaiser Metal Products, Bristol, Pa., in which Sears, Roebuck has a large stock interest.

• • •

Cut-Rate Fares Threaten IATA Structure

Loftleidir, non-IATA carrier, slashes New York-Iceland fares, cutting 20% off trans-Atlantic prices.

By Eric Bramley

DISRUPTION of the entire U. S.-Europe air fare structure is threatened by the Atlantic tourist rates of Loftleidir H. F., the Icelandic airline, rates which are substantially under the tariffs of International Air Transport Association members.

It's a situation that could spread halfway around the world through an agreement now in effect between Loftleidir and Braathens S.A.F.E., the Norwegian independent airline that operates as far east as Hong Kong. Both carriers are non-IATA.

Furthermore, a break in IATA's ranks is a possibility. Scandinavian Airlines System, which has protested the Loftleidir fares vigorously, might be forced eventually to withdraw from IATA and meet the competition, if matters become serious enough. Such a withdrawal would upset and materially weaken the entire IATA machinery.

The low fares to Scandinavia have had repercussions on both sides of the Atlantic. SAS has protested here and in Norway. Pan American World Airways is watching the situation. IATA, the State Department, and the Civil Aeronautics Board are studying it. And, it is learned, CAB's Office of Enforcement has been and is continuing to investigate Loftleidir.

What action, if any, will be taken remains to be seen. Some observers familiar with the developments believe that the faster something is done the better, before there is any expansion of the service.

Loftleidir is flying one round-trip weekly with DC-4's, offering "combination tourist class" service ("at the lowest prices ever quoted on the Atlantic," according to ads) from New York to Reykjavik, Hamburg, Copenhagen, Stavenger, and Oslo. Some rates are more than 20% lower than IATA carriers. It is said to be using one DC-4 of its own and one belonging to Braathens; the pooled planes are also used on Braathen's routes to the east. Maintenance is performed by Braathens at Stavenger, Norway.

Although competition with two DC-4's may not be too serious, Braathens' has two Super Constellations on order and an expansion of service at a later date with these planes, not only on the Atlantic, but to points east, would present a real threat to IATA carriers.

The unusual circumstances surrounding the operation include the U. S.-Iceland air transport agreement, signed in 1945, which has no provision covering fares. Thus, Loftleidir can fix any rate it pleases on the U. S.-Iceland leg.

However, Icelandic agreements with Norway and Denmark provide that IATA fares are to be considered in setting rates between the countries; if such fares are lacking, the airlines of the countries shall between themselves fix the charges. Therefore, Loftleidir's rates from Reykjavik to Scandinavia are, in effect, controlled. A low fare on one segment combines with an established fare on the other to produce a reduced U. S.-Scandinavia rate.

Through this loophole in the U. S.-Icelandic agreement, Loftleidir is charging $172 one-way New York-Reykjavik, or 21% under the IATA rate of $215.10. Off-season round-trip is $265 against $332.20, and on-season round-trip is $310 compared with $387.20.

Complete Trip: $262.10

For the complete New York-to-Oslo trip, Loftleidir advertises a through rate of $262.10 one-way, against IATA's $313.10. Off-season and on-season round-trips are $427.20 and $472.20 compared with $493.60 and $563.60, respectively. Similar reductions are offered to Hamburg, Copenhagen, Stockholm, and Helsinki.

It seems evident that the New York-Oslo one-way fare of $262.10, for example, is a combination of the $172 New York-Reykjavik with the $90.10 quoted by PAA for Reykjavik-Oslo. Thus, Loftleidir stays within rate limits —and the provisions of the bilateral agreements—on one leg, while charging less on the other.

The only tariff Loftleidir has filed —and is required to file—with the CAB is U. S.-Iceland, effective January 7, 1953, which superseded all previous tariffs. In advertisements and schedules, it is quoting through rates. However its schedules show that a passenger rides U. S.-Iceland on Flight LL301, leaving Iceland two and one-half hours later for Europe on LL303. Observers state that a Loftleidir ticket contains two coupons—one for New York- Reykjavik, the other Reykjavik-Europe. They also claim that LL301 and LL303 are operated with the same airplane. Every other week, the flight into New York is made with a DC-4 with Braathens' markings, but with an Icelandic crew.

SAS has protested to the U. S. that the Loftleidir fares are discriminatory in the light of CAB's approval of IATA as the machinery for establishment of international rates. It also raises the question of whether the fares constitute an unfair or deceptive practice or unfair method of competition under section 411 of the Civil Aeronautics Act.

The protest is being studied by CAB. Under the Act, however, CAB has no control over international rates; it does not have the power to suspend a foreign carrier's tariff. No airline is required to belong to IATA, and it is unlikely that a fare offered to the general public could be termed "discriminatory."

Other angles are being explored. It is believed, for example, that CAB's Office of Enforcement will look carefully at the "unfair competition" charge, which would include the alleged holding out to the public of through service on what are evidently connecting trips.

It is also probable that the question of who controls Loftleidir will be examined. Latest information available to CAB is that the company is 100% owned by Icelandic citizens. However, the question has been raised whether acquisition of Loftleidir's one DC-4 was financed by Braathens and whether the latter may, in effect, control the former. The U. S.-Iceland agreement states that "each contracting party reserves the right to withhold or revoke a certificate or permit to an airline of the other party in any case where it is not satisfied that substantial ownership and effective control are vested in nationals of either party to this agreement."

The State Department's present attitude seems to be one of "sitting tight" and watching to see if things grow more serious. The department's initial approach would be informal discussions with Iceland, and some officials believe that this is the best course open. Beyond that, the only approach would be the more drastic one of attempting to renegotiate the bilateral agreement to include clauses on fares.

IATA is studying the matter to determine whether it can do anything, according to Sir William Hildred, director general. He pointed out that Iceland is in the "anomalous position" of having one airline in IATA (Flugfelag Islands H. F., operating domestic services and flying once-weekly to Copenhagen) and one outside (Loftleidir). •••

First visit to an aircraft plant since taking office was recently made by Defense Secretary Charles E. Wilson at Boeing's Wichita division. He is shown above inspecting a wire coding machine with (center and right) J. E. Schaefer, Boeing vice president and Wichita division general manager, and Secretary of the Air Force Harold E. Talbott. General Nathan F. Twining, Air Force vice chief of staff, was also on the tour.

Compromise Ends UAL Coach Seating Fight

The once-bitter United Air Lines-CAB fight over seating minimums for DC-4 coach planes has been resolved in an informal compromise plan. United will modify its 12 DC-4 coaches to provide a seating arrangement consistent with CAB's 64-seat minimum, while CAB will permit United to observe a 54-seat minimum until modification is completed.

Last November 22 the battle flared when United voluntarily limited the number of passengers aboard its DC-4 coaches to 54, despite the 66 seats in the planes and the 64-seat CAB minimum. The action was based on United's belief that more than 54 passengers on a DC-4 coach flight constituted a safety hazard. The main argument was over the three-abreast seating arrangement and the congestion resulting under emergency evacuation conditions.

The United action led to a series of open fights between UAL president W. A. Patterson and the CAB and CAA. CAB would not authorize a 54-seat tariff and eventually this led to initiation of a CAB enforcement action against United.

But all this will be dropped if the informal compromise works. Modification of the United DC-4's involves installation of an additional exit and a new seating arrangement involving only a few rows of three-abreast seats. The first modified plane will be ready in late July with the last of 12 scheduled for delivery on December 30.

United's new tariff will name a 54-seat tariff to apply to each plane until it is modified. It will also name a 64-seat minimum to apply to the modified planes as they are put into service.

Financial Reports Show Sales Up Sharply

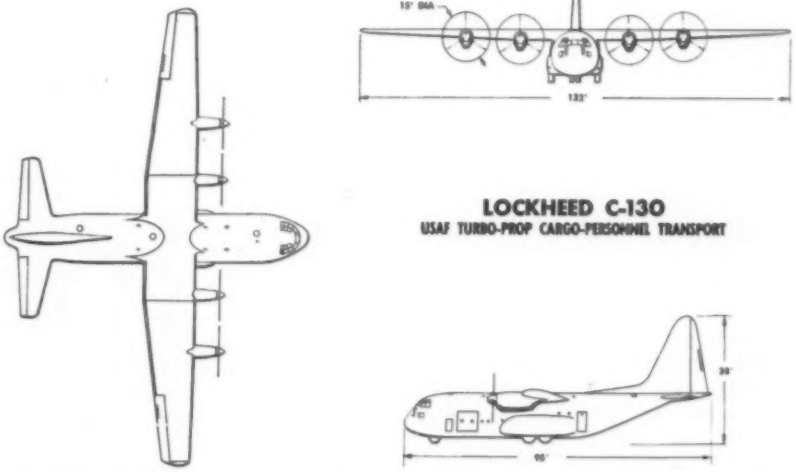
The pattern of sharply increased sales without corresponding increases in net income for the aircraft industry continued as Boeing, Lockheed, Republic, and Fairchild issued their annual reports:

- **Boeing** netted $14,084,449, or $8.67 a share, on sales of $739,010,214, compared with $7,140,751, or $4.40 a share, on sales of $337,290,566 in 1951. Backlog on December 31, 1952: $1,648,000,000.
- **Lockheed** netted $9,058,000, or $3.61 a share, on sales of $438,122,000, as against a 1951 net of $5,793,000, or $2.55 a share, on sales of $237,230,000. December 31 backlog: $2 billion.
- **Republic** reported a 1952 net of $8,096,001, or $7.32 a share, on sales of $412,235,088, vs. a net of $2,934,613, or $2.92 a share, on sales of $130,440,552 for 1951. Backlog as 1953 began: more than $1 billion.
- **Fairchild** had a net of $3,148,621, or $1.36 a share, on sales of $141,642,703, against a 1951 net of $2,222,130, or 96 cents a share, on sales of $74,978,802. Backlog as of March 12: $335,000,000.

Regulus in flight. Navy guided missile developed by Chance Vought Aircraft for launching from submarines, surface ships, and shore bases, shows twin smoke cones streaming from rocket motors mounted on each side of fuselage. Turbojet engine is installed inside the fuselage. After training missions the missile lands with help of parachute-type brake on average runway. Trailing wire activates instruments after shock of take-off is past.

Bell X-1A Starts Tests

The Bell X-1A research plane has started flight tests at Edwards AFB, California. Bell test pilot Jean C. ("Skip") Ziegler is conducting first flights, and Maj. Charles Yeager, who took the X-1 through the sonic barrier in 1947, has been designated project officer on the craft after it is turned over to the USAF's Air Research and Development Command.



Lockheed C-130 turboprop medium transport is shown in first three-view drawing, which points up extra cargo door forward of propeller, two cargo doors which permit "flow type" cargo handling, and side door aft of wing which is used for paratroop exit. Wind deflector for paratroop operations is provided by hinging of the aft section of the wheel-well fairing.

Part 45: Loophole for the Irregulars?

'Private' operators can take military charters and charge what they please without asking CAB.

By William V. Henzey

THE RIGHT of a comparatively obscure class of air carriers known as "Part 45 operators" to take part in military contract business, a right recently emphasized by the Department of Defense, has inside Government and Washington airline circles alarmed, puzzled, and frustrated.

Part 45 carriers are simply "private" carriers as distinguished from "common" carriers and their name derives from the fact that their only government authorization to operate is a Part 45 safety authorization issued by the Civil Aeronautics Administration.

The alarm in Washington springs from these very real possibilities:

• **The rate structure** of scheduled and non-scheduled airlines under which military contract or CAM flights are performed faces possible destruction, because Part 45 operators, not subject to CAB economic rules, can under-bid common carriers, which must observe tariff rates in bids to the military.

• **A new area of operation,** free from CAB control, may be provided for and exploited by those large irregular airlines which lose or have lost their letters of registration for violations of the Civil Aeronautics Act.

No Incentive

• **An outbreak of violations** of CAB's economic regulations by large irregulars, equal to or surpassing anything of its kind in the past, might result because their incentive to comply with CAB rules would be destroyed. As one large irregular official put it, "We are now complying with CAB's rules, but if violators of those rules are to be rewarded with a license, free from CAB's jurisdiction, the incentive to comply would be considerably weakened."

• **The orderly procedure,** comparatively speaking, now set up in the Defense Department's Military Traffic Service for arranging military contract or CAM movements faces disruption.

These are some of the immediate possibilities giving cause for worry. Others may come to light as more is learned about the confusing development. What is most puzzling now is how the situation developed.

Part 45 carriers and any private carriers have always had the right to bid for Government contract business. But until the past month military air contract business has been handled by the Military Traffic Service in conjunction with the Air Transport Association representing the scheduled industry and a Joint Control Board of the Independent Military Air Transport Association and Aircoach Transport Association, representatives of the non-scheduled industry.

By an inter-service memorandum, dated February 20, 1953, however, MTS deputy director Capt. J. H. Nevins, Jr., USN, advised that, upon request, Defense policy was being clarified to specify clearly the right of Part 45 carriers to bid on equal terms with other types of carriers for CAM movements.

Who requested the "clarification" is still pretty much of a mystery. Some reports indicated that the Senate Small Business Committee, a champion of the large irregulars' cause, particularly those carriers whose licenses have been or are about to be revoked by CAB, was behind the move. Others indicate that a Part 45 operator, one Vance Roberts, owner of Consolidated Airlines, may be responsible.

Equally puzzling is why the Defense Department, which practically forced IMATA and ACTA to set up a Joint Control Board to minimize the number of parties to deal with in CAM movements, should provide the spark which could greatly increase the number of bidders for contract traffic.

Currently CAA lists 10 holders of Part 45 certificates. This, according to inside government circles, could greatly expand in the near future. One non-scheduled airline, for example, is about to lose its license before CAB, and informed sources say it has already made overtures looking for a Part 45 permit. This would be an avenue for others in the same boat.

Also, non-scheduled lines of another day may be revived. In one case, CAA indicated it recently issued a Part 45 license to one Viking Airlines. Several years ago, CAB revoked the letter of registration of a company known as Aero Van Express which also operated as Viking Airlines. The charge: "willful and knowing violations of the Act and Economic Regulations."

Frustration is apparent from the problem placed before CAB, on an informal level, by IMATA president Ramsay D. Potts, Jr. Potts asked for a legal ruling from the Board to determine if Part 45 operators contracting with the Government are "private" or "common" carriers. CAB lawyers are digging through the law for possible precedent-setting decisions of the past.

Potts explained his query this way: if the Part 45 operator is deemed by CAB to be a private carrier, his operations would not be subject to the same CAB economic rules that common carriers must obey. If the Part 45 carrier is deemed by CAB to be a common carrier in its dealings with the Government, then a measure of CAB economic control can be exacted and little damage would probably result.

But many local attorneys say the weight of law is against any such finding as the latter, and there is no way the Board can reach out to control the Part 45 line.

Another Question

With the situation in that state, another question has been raised by Vance Roberts, of Consolidated. With the assistance of CAB Member Joseph P. Adams, Roberts received a determination from the Board on the question of whether Part 45 carriers could be members of the existing non-scheduled airline associations or be represented before the military by them.

CAB had ruled previously that ACTA and IMATA membership must be limited, insofar as military contract flights are concerned, to CAB-authorized lines. This, CAB Chairman Oswald Ryan told Roberts in the Board's reply, rules out possible participation of Part 45 lines in ACTA and IMATA as members.

But, the Board Chairman said, nothing precludes ACTA and IMATA from entering contractual arrangements with Part 45 lines to handle their military dealings, provided, in effect, that the associations would be responsible for policing the "private" carriers.

Potts, IMATA head, indicated to American Aviation no pleasure over the prospect of his association policing Part 45 carriers which might be under contract to IMATA. Further, he said, IMATA would not consider any such contractual arrangements with the private lines unless CAB exercises some economic control over them.

ACTA's board of directors was meeting on the subject at press-time and had no comment to make.

The situation was, therefore, well summed up by CAB Chairman Ryan when he told American Aviation, "I honestly don't know where the thing goes from here." • • •

News Briefs

The Air Force's **heavy press program,** flying in the face of rumors of economizing by the new Administration, **will be pushed through as scheduled,** as far as the Department of Defense is concerned. For $389 million the USAF would build 17 large forging or extrusion presses for use by the aircraft industry.

• •

A pilot seniority agreement has been set up for some 500 captains and first officers of **Delta Air Lines and Chicago & Southern Air Lines,** to go into effect after the two carriers merge. Consolidation of the lists into a new seniority listing will "permit inauguration of additional flights and new services promptly after stockholders vote," according to a statement by the presidents of both carriers.

• •

Trans-Canada Air Lines paid income tax for the first time in its corporate life during the last fiscal year, and its net profit showed it. The figure, which had reached $3.9 million in 1951, plummeted to **$807,879 in 1952.** Advance payments on equipment helped, too; the carrier has on order eight Super Constellations, 15 Vickers Viscounts, and three Bristol 170 freighters.

• •

Braniff Airways took in operating revenues of $31.9 million during 1952, but a loss of $1.5 million on international operations skimmed off most of the profit. As a result, **the earnings before taxes last year were only $265,140,** compared to 1951's total of $2.1 million.

• •

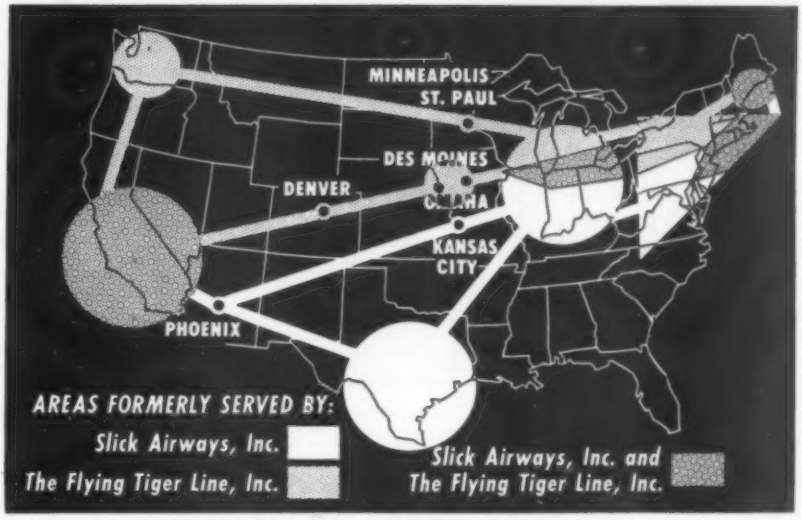
Nationalization of Indian airlines came a step nearer with the introduction in the Indian parliament of legislation that would provide for two carriers, one domestic and one international. Compensation to private stockholders would total about $8 million.

• •

Hazeltine Corp.'s net income rose by about 25% last year. Figure for 1952 has been reported as just over $2 million, or $2.86 a share, whereas 1951 netted the company $1.5 million, or $2.08 a share.

• •

Components for the **J40 jet engine** will be built by **Rheem Manufacturing Co.** under subcontract to Westinghouse, according to a letter of intent. Previous Rheem subcontracts have been aircraft and guided missiles.



FIFTH LARGEST domestic carrier may be created as the Flying Tiger Line and Slick Airways merge (see story, page 12).

The first seven Sikorsky HRS-3 helicopters received at the Marine Corps Air Facility near Santa Ana, Calif., arrived after a **mass cross-continent flight** that took six days.

AAP Scholarship Established

A scholarship fund for complete three-year engineering courses at Parks College of Aeronautical Technology at Saint Louis University has been established by Wayne W. Parrish, editor and publisher of American Aviation Publications.

The program has already been activated, with the first scholarship award made to Robert O. Moe of St. Maries, Idaho, based on the findings of a three-man selection committee appointed by Dean Niels C. Beck of the University. Another scholarship will be awarded for the fall semester.

AMERICAN AVIATION will sponsor a new student each year and provide tuition for the complete three-year engineering program. By 1955 there will be three scholarships running simultaneously, with a student in each year of the program.

In announcing the scholarships Parrish cited the critical need for aeronautical engineers. He added that similar scholarships would provide the aviation industry with an effective way of minimizing the engineer shortage.

For the 18th consecutive year **Eastern Air Lines has come up with a profit.** Net after Federal taxes in 1952 was $8.5 million, up from a 1951 net of $7.2 million. Last year's figure was boosted by an after-taxes profit of $1.2 million that resulted from the sale of 32 DC-3's. **Early results this year** should give EAL's stockholders no sleepless nights either: **passenger revenues are up 30%** over last year's similar period.

• •

The Air Force's **ability to deliver atomic bombs** is lagging behind the development of the bombs themselves, according to Secretary of the Air Force **Harold E. Talbott.** One way to ease the situation is to push work at the controversial Arnold Engineering Development Center at Tullahoma, Tenn., Talbott told the House Armed Services Committee.

• •

Patent for a new type of **jet helicopter** has been granted to **Hiller Helicopters.** The engine is located at the rotor shaft and the exhaust gases run out through the blades to the tips, avoiding fuel flow and blade icing problems, as well as producing less drag than those helicopters which have small engines mounted in the rotor tips.

• •

A shortage of airports in the Miami area is on its way, according to the **Airport Use Panel** of the Air Coordinating Committee, which has urged airport officials in the area to prepare a master plan and establish an "airport authority" to enforce zoning.

STRIPPED-DOWN FIGHTER, the plywood-covered Bell XP-77, was built during World War II, but got nowhere.

What Good Are Gadgets? Complexity's Case

Devices added to combat aircraft are added to do a job; combat records show they're not excess baggage.

By JAMES J. HAGGERTY

THE SUBJECT of aircraft complexity has been very topical of late, what with a rash of newspaper stories, magazine articles, and technical papers, all in the same general vein, to wit: our fighter aircraft are becoming so complex that we may lose our air superiority to lighter, uncomplicated types like the Russian MiG-15.

This appears to be the general opinion of fighter pilots in Korea who have tangled with the MiG. This reporter interviewed one of them recently—Col. Royal Baker, former commanding officer of the Fourth Fighter Interceptor Group (North American F-86 Sabres) in Korea and the top ace of them all with 12 MiG's and one Lavochkin 9 to his credit in less than a year of combat service.

Baker agrees in principle with the "too complex" school of thought, although his views are perhaps more temperate than some of the statements issued by returning Korean pilots.

"Let's put it this way," said Baker, who insists that he is just an average pilot despite his 13 kills: "The 86 is not too complicated. But it could be a lot less complicated."

Baker favors production of the controversial "stripped-down fighter," a light weight, high performance airplane in which all excess gadgetry, with its attendant weight, is eliminated in favor of the added performance that the weight drop can buy. "You need an airplane that can outperform the enemy in *all* categories," he said.

That is an opinion which is shared not only by Korean pilots but also by a goodly number of design engineers in the aircraft industry.

But there is one argument which is difficult for the proponents of "decomplexization" to work around and that is the overwhelming advantage the F-86 enjoys in actual air-to-air combat with the vaunted MiG-15. Latest available figures show that 592 MiG's have been destroyed—against the loss of 54 Sabres. That is a ratio of about 11 to 1 in favor of the F-86.

Baker says that there are five factors which account for the success of the F-86 against its lighter and (at some altitudes) more maneuverable Russian counterpart: the training and skill of American pilots, their leadership, USAF tactics, gunsighting equipment, and the plane itself, not necessarily in that order.

It is significant that he includes the airplane itself; it indicates that, complex a piece of equipment as it undeniably is, it can still do the job for which it was designed effectively. And maybe there are good reasons for that complexity. That is the other side of the story, which has received practically no attention to date.

Brig. Gen. B. S. Kelsey, deputy director of research and development, USAF, takes the other side of the argument. Included in the list of equipment items which have been referred to as "gadgetry" are ejection seats, emergency fuel systems, emergency landing gear, armor plate, etc. These are not gadgets at all, says Kelsey—they are important pieces of equipment designed to keep the pilot alive.

"That's not a humanitarian consideration," Kelsey said. "It's a tactical consideration. A cold-blooded analysis shows that it pays to get the man back safely. He represents quite an investment in training and experience."

Aside from the humanitarian aspects, he adds, if a pilot is lost the Air Force not only loses its investment in him but it also loses valuable time—the time required to train a replacement to the experience level of the lost pilot. The Air Force feels that it is worth while to take every possible precaution to insure the pilot's safety, even at the cost of added weight, or "complexity."

"It depends on what you call complexity," Kelsey states. An airplane wing, for instance, is extremely complex. The milled wing of a modern fighter or bomber tapers in two different directions, must be extremely thin for high speeds, yet must withstand the terrific stresses which will be encountered at those speeds.

The wing of a Boeing B-47, as an example, will support a stack of Cadillacs as high as the Washington monument, Kelsey points out. That strength requirement means weight, but no one would suggest that the wings be built lighter and not quite as strong.

The Russian Trend: Complexity

A new idea was injected into the controversial aircraft complexity argument by the general manager of Westinghouse Electric Corp.'s Baltimore divisions.

One reason why Russian aircraft are not as complex as those of the USAF and Navy is that their economy has not yet permitted them to develop the "gadgets" we have, said Frank W. Godsey, Jr., speaking before the Congress of Civil Aviation Conferences in Kansas City. Godsey has had opportunities to evaluate captured Russian equipment.

But in the cases where they do have gadgets, their trend is following the same pattern as ours, he added. "In not one case have I seen an instance where the Russians have simplified equipment in new designs. Always it was more complex, fitted to do a better job—and thus allow their pilots a better chance to do their work and get home alive."

Defending the complexity of modern aircraft, Godsey said that every item has a use. "If one took a jet fighter complete with the latest in radar, computers, engine, navigation and so on, and started stripping off the so-called luxuries, with each removal he would remove some of the capability of the aircraft to do its job. Remove enough and you would have nothing more than an aerial 'hot-rod' which would go places fast if you didn't care where you were going. And if you chanced to find the enemy, well, you could always ram him."

And how about the landing gear retracting mechanism, a heavy and complex piece of machinery? Or the actuating mechanism for landing flaps? Or reverse-pitch mechanism on a propeller-driven plane? There are any number of other items of "complexity" in an airplane which are important to the operation and performance of the plane and which no one would consider eliminating. Just as important, from the Air Force point of view, is the equipment which increases the pilot's chances of getting home safely.

Add up the increased weight of these 'important' items of complexity, says Kelsey, and you'll find that the additional weight of the controversial items of complexity (emergency landing gear, ejection seat, etc.) is negligible.

Modern aircraft speeds have made contributions to complexity other than structural weight. Take the bombsight. In World War II, the bombardier had at least three or four minutes from the time he sighted the target until the time he had to release his bombs, giving him time to line up the sight, correct for windage, and actuate the bomb release. At the 600-mile-per-hour speeds of bombers like the B-47, he has less than 30 seconds. Thus, the bombing computer to do the work for him. It adds weight, but there's no way to eliminate it.

Or take the complicated controls of a jet engine. The pilot couldn't operate the half-dozen or more levers it would take to control the engine manually. The system had to be designed so that there was only one lever—the rest of the work had to be automatic. Complex, but no way around it.

What about the stripped-down fighter, or superiority fighters?

Kelsey is not overly enthusiastic about the idea. There have always been proposals or actual construction projects involving designs of lighter weight than those in service, he points out. During World War II, the Air Force actually built one in answer to demands for the "American Zero," the Bell XP-77, but it didn't amount to anything.

Nonetheless the Air Force is pursuing the idea as insurance. One "stripped-down" contract is now in negotiation and, if funds permit, there may be a design competition for another one in the coming fiscal year.

But Kelsey does not feel that the answer to the demand for more performance lies in the direction of the light weight airplane. "If we want reliability we must design and build for reliability," he says.

The answer to the MiG and future planes like it may lie in bigger airplanes, not smaller ones. The desired performance can be obtained, not by stripping the airplane, but by adding more power. Power means weight, of course, but the trend in weight/power ratio is downward. The stripped-down fighter may prove to be a big success, but all indications point to the probability that airplanes will get heavier, not lighter. •••

CASE IN POINT is the overloaded F-86F, say complexity critics.

Industry-Wide Bargaining Seen

Six airlines and the AFL-Machinists have begun preliminary discussions which may lead to the adoption of industry-wide bargaining on wages for maintenance and overhaul workers. Representatives of Capital, Eastern, National, Northwest, TWA, and United are meeting with the IAM and the National Mediation Board to work out some arrangement whereby all wage negotiations would be carried on simultaneously.

All of the airlines' IAM pacts ended December 31 and are now up for renewal, except that Eastern's contract has been opened for wage discussions only.

The sessions were proposed by the IAM, which hopes to include other airlines eventually. Fringe benefits would still be discussed with each individual carrier.

ANOTHER REASON ALLISON LEADS IN THE AIR

No Federal Airport Aid in '54: Murray

Meeting in Kansas City, AOC and AAAE are given the word by the Under Secretary of Commerce.

By Don M. Wilson

FOR SEVERAL MONTHS rumors have been circulating that Federal Aid Airport funds will be cut from the revised 1954 budget. Last week, addressing the Civil Aviation Congress in Kansas City, Mo., Commerce Under Secretary Robert B. Murray, Jr., tossed the airport program into the laps of the airport industry.

Murray had an attentive audience. It was made up of the Airport Operators Council meeting in joint session with the American Association of Airport Executives, the two main groups affected by the program. Also on hand were representatives of thirteen other aviation organizations from all parts of the United States, Puerto Rico, Hawaii, England, and France.

Murray's surprise disclosure set the pattern for a busy meeting. His statement highlighted some of the differences between the two groups, but on the whole a series of strong statements by principal speakers did arouse sufficient interest and discussion to assure the future of the Civil Aviation Congress Convention in the years ahead.

Election of new officers for both AOC and AAAE (see cover) were held for the 1953-54 term. The election results were:

• **AOC:** President, G. D. Albrecht, manager, Memphis (Tenn.) Municipal Airport; first vice president, Fred Glass, director, aviation department, Port of New York Authority; second vice president, Robert Aldrich, director, Minneapolis-St. Paul Metropolitan Airports Commission.

• **AAAE:** President, Francis A. Bolton, superintendent of Port Columbus (Ohio) Airport; first vice president, W. G. Fuller, director of aviation for Fort Worth, Texas; second vice president, Dr. Leslie A. Bryan, director of the Institute of Aviation of the University of Illinois; executive secretary, Walter E. Betsworth.

The four-day sessions pinpointed many problems revolving around airports, their financing, and specific aspects of introducing jet transport operations. Principal issues and comments included:

• **Airport Aid:** Both AOC and AAAE after hearing Murray's statement initiated a resolution favoring the continuance of federal aid in the financing of municipally owned airports. Officers of each organization will present these views to the Congress, to appropriate federal officers, and to other interested persons.

• **Co-mingling of Fuel:** The airlines are directly opposed to this method of refueling for several reasons, as put forth by airline officials present at the meeting:

Co-mingling of fuels would jeopardize the standards of each airline;

Airlines fear one load of inferior fuel would contaminate the entire system;

A higher cost per gallon of fuel to airlines due to high cost of installation and maintenance of underground refueling system by airport operator is expected;

Oil companies would lose their incentive to develop new and superior fuels because of no competitive advantage would be possible.

The airport operators meet the airline arguments with these three answers:

A central storage depot and connecting refueling pits at ramp positions would eliminate much vehicle traffic congestion around the terminal building area;

Cost of delivering fuel to the airlines would be less due to efficiency of handling;

Less danger of fire would exist.

On the Cover

• **G. D. Albrecht,** left, newly elected president of AOC, has been the manager of the Memphis Airport since 1937 except for a five-year tour of duty with the United States Army Field Artillery, from which he retired as a lieutenant colonel. He not only drew up the master plan for the Memphis airport (he is a registered civil engineer in Tennessee) but also takes an active part in supervising the actual construction on the field.

• **Francis A. Bolton,** right, newly elected president of AAAE, has been the superintendent of the Port Columbus (Ohio) Airport for the past seven years. Upon graduation from Ohio State University he joined Curtiss-Wright, working in its experimental department. He left to enter the U.S. Navy after the outbreak of war. He has been at his present job since his release from the service.

Fred B. Lee, new Civil Aeronautics Administrator, made the statement that, "the co-mingling of fuels at the Washington National Airport was working out very well and that all the parties involved appeared satisfied."

• **Jet Transports:** John Briscoe, deputy director of aerodromes, Ministry of Civil Aviation, London, pointed out five factors which are revelant to jet operation on airports:

Speeded-up ground handling is of prime importance because of the jets' high fuel consumption;

Design of aprons around terminal area for jet aircraft can be handled by present day apron designed for piston aircraft;

Jet aircraft will necessitate pressure refueling;

Greatest damage to pavements results from fuel droppings and not from hot exhaust gases as first suspected. Concrete surfaces on the whole are not appreciably damaged by any type of jet operation;

Operation of jet aircraft so far as can be foreseen will not necessitate special noise-reducing provisions on the actual terminal apron, but some measure of sound-proofing of the buildings will be an advantage.

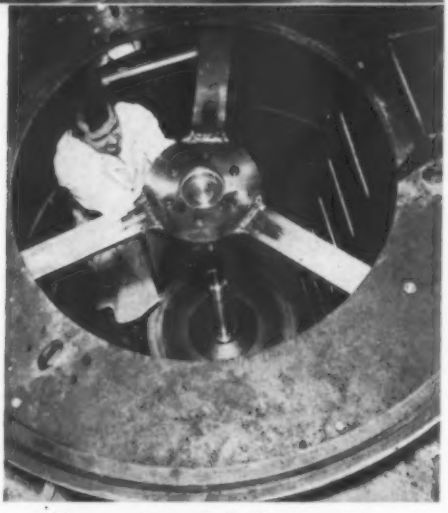
From a manufacturers' viewpoint, as expressed by Edward C. Wells, Boeing Airplane Co.'s vice president-engineering: "Special problems envisioned in relation to take-offs and landings do not appear to be on the horizon." Instead, he asserted, the greater power available from jet engines combined with less wing loading indicates very good jetliner take-off characteristics. Landing approach paths to the runway will be at least as good as those required for today's commercial planes.

Other problems confronting the airport operators involved the "recapture clause" in the surplus airport property deed issued by the military to many municipal governments after World War II, and the joint civil-military use of airports.

The solution which the airport operators hope to obtain is a complete release from the "recapture clause," the removal of a large amount of military traffic to less congested airports located in the general operating area, and just compensation for the facilities which are presently being used to a substantial degree by the military.

Several large cities have offered to buy land and build a new airport if the military would consent to leave the municipal airport and move to the new site. So far as it can be determined, the military has turned down all these offers. •••

We burst this wheel to prove its strength



Allison turbine wheels also are spun at overspeeds for proof of quality in production as well as for laboratory development.

You are looking at a photograph of a jet engine titanium compressor wheel being deliberately disintegrated by Allison engineers in a super-high-speed test. First, our engineers spun the wheel at the highest rpm the test machine could produce—and it would not burst. Then they cut a notch in the hub and the wheel "let go" at 22,000 rpm—5,000 rpm higher than the strongest steel wheel could stand. This picture taken at 2-millionths of a second showed our engineers the action at the instant the wheel burst.

Tests like this aren't new—but this one served to show that the new higher-strength, lighter-weight titanium alloy wheel has a safety margin of many thousands more rpm than would ever be experienced in actual flight. Careful testing like this forecasts tomorrow's successful application of new metallurgical developments—typical of the continuous pioneering which maintains the leadership for Allison engines in the air.

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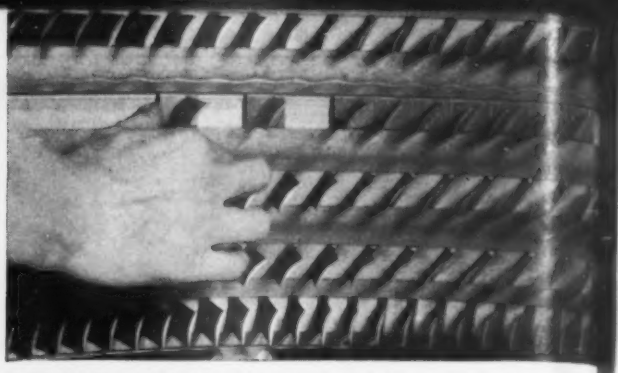
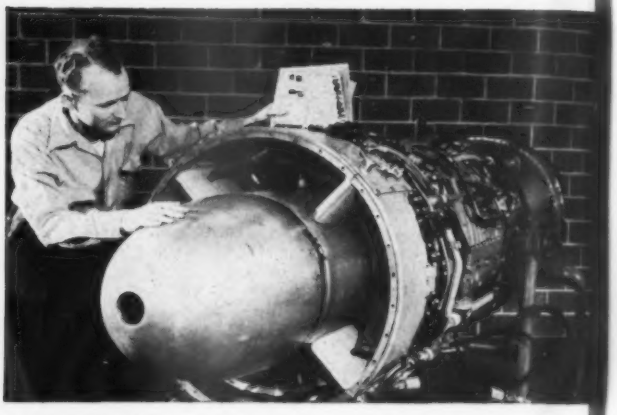
World's most experienced designer and builder of aircraft turbine engines — *J35 and J71 Axial, J33 Centrifugal Turbo-Jet engines, T38 and T40 Turbo-Prop engines*

POWERFUL USAF FIGHTER, the North American F-86 has compiled an imposing record. New engine improvements give Sabre Jet greater speed, more range.



FABRICATED STATOR BLADES are inserted into compressor casing. This development reduces cost with no efficiency-loss.



J47 "HOT NOSE" is warmed by air bled from compressor. Retractable screens help eliminate icing problems.

CONTINUING DEVELOPMENT ON G-E J47 HELPS IMPROVE SABRE JET PERFORMANCE

North American F-86 Flys Faster, Farther

EVER-CHANGING NEEDS of air combat have been met by important refinements and improved performance in the General Electric J47 turbojet—powerplant of the North American F-86 Sabre Jet. A glance at the MIG-alley scoreboard attests to the F-86's past success; but now even better J47 engines are powering improved Sabre Jets in combat against the MIG.

MORE SPEED . . . MORE RANGE were necessary to keep the Sabre Jet's present superiority intact. So G-E engineers designed more efficient compressors, water/alcohol injection, and a total of 3000 design improvements. Result? Greater thrust, lower specific fuel consumption at higher rpm—with *no increase* in engine frame size or weight.

CONTINUING IMPROVEMENTS have made the J47 America's number one production turbojet. Yet no G-E engine design is static. Even now, General Electric's vast jet engine facilities are using every means possible to make G-E jets more powerful, more reliable, and more economical than currently-produced engines. Progress is General Electric's most important product. *General Electric Co., Schenectady, N. Y.*

230-14

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Manufacturers Told CAA Jet Requirements

Problems of jet operations emphasized by Lee, but U.S. manufacturers and de Havilland see solutions.

By ANTHONY VANDYK

DIVERGENT American and British views on jet transports came out into the open late last month when the de Havilland Aircraft Co. went on record with a statement replying to a speech by Fred B. Lee, acting Administrator of Civil Aeronautics, in which he referred to "almost innumerable" problems to be solved before jetliners can be certificated for civil use.

Speaking before the Airport Operators Council, part of the Congress of Civil Aviation Conferences in Kansas City, Lee said that runway deceleration problems due to lack of reverse thrust, high approach speeds, and clean contours, plus the fact that it is difficult to detect a loss of power in a jet power plant, make the jet transport a problem aircraft on landings and take-offs.

The de Havilland company pointed out that with jet transports there is less chance of engine failure on take-off than with piston-engine planes (in 12,000 flying hours no Comet has suffered engine failure at take-off); moreover the jet engine develops maximum thrust at sea level and the take-off acceleration of the jetliner is no worse than that of piston-engine planes (the angle of climb is considerably better), the de Havilland statement added.

Specifically discussing the Comet, the British firm asserted that the plane's landing speed is no higher than those of some American piston-engine transports. The statement pointed out that the Comet is designed and certificated to operate from existing airfields—there is no need to lengthen runways for jetliners; new versions of the Comet will require progressively less space for take-off.

In his Kansas City speech Lee paraphrased much of a CAA document entitled "Proposed Airworthiness Policies for Certification of Turbine Powered Transport Airplanes," published earlier this year for the purpose of "bringing up to date the current thinking of the CAA regarding certification and operation problems of turbine transports and to stimulate interest and comments from the industry."

Lee sees two general types of safety problems in connection with jet transports. One is associated with the inherent characteristics of jet power. The other stems from the high altitudes and high speed at which they will operate.

Because the thrust of jet engines under static conditions is very low compared with a propeller-engine combination and there is no slipstream over the wing in a jet plane, the take-off acceleration is low and the early climb is flat. The safety implications of this situation with moderate-length runways is obvious. Some relief may be available in afterburners and water injection, or some other means to augment the thrust temporarily.

Familiarity Breeds Content

Afterburners, however, will aggravate the noise problem, which at best will be a serious factor in civil jet operations. Lee says no technical solution is yet in sight, but there is a little encouragement in British reports that public objections to the noise of jets is based partly on unfamiliarity with the sounds; objections diminished when the sound of jet take-offs became commonplace.

A basic safety consideration is the possibility of an engine failure during take-off; the plane must be able to continue flight on the remaining engines. Here, again, the characteristics of the jet introduce problems. Lee contends that it is much more difficult, in most cases, to detect loss of power in a jet powerplant than in a piston engine. This may result in a delay of several seconds before the pilot realizes that power has been lost. A reliable device which will continuously measure and indicate the amount of thrust being developed in each engine is urgently required.

Problems of take-off are coupled with stopping difficulties in jet aircraft. The absence of propellers and reverse thrust, plus high approach speeds and clean aircraft contours, combine to make stopping very difficult on runways of moderate length, particularly on slippery runways. The drag parachutes used in military aircraft do not appear practical for civil use except in emergencies.

Pending the development of devices for producing reverse thrust in jets, special attention may have to be given to overrun areas. Lee cautions, however, that it is no longer economically feasible to expand airports and extend runways each time a new transport is introduced; jetliners will have to be designed to use existing airport facilities.

The power variation of turbine planes with temperature is about twice as great as with piston-engine aircraft. This is partly offset by the fact that humidity changes are less critical. Ram has three times as much effect on power in turbine engines as in piston engines. A very important factor is the effect of operating time in view of the significant power deterioration between overhaul periods of turbine engines.

Discussing explosive decompression at some length, Lee points out that at 35,000 or 45,000 feet this could be fatal to all aboard unless the plane is able to dive very quickly to a lower altitude. The CAA proposes to require two completely independent cabin pressurization systems, each of which would be capable of maintaining an equivalent altitude of 15,000 feet.

It is also considered imperative that each person exposed to cabin pressure altitudes greater than 30,000 feet be supplied with 100% oxygen within a few seconds following decompression. Maintaining pressurization becomes just as important from a safety standpoint as preventing a wing from failing.

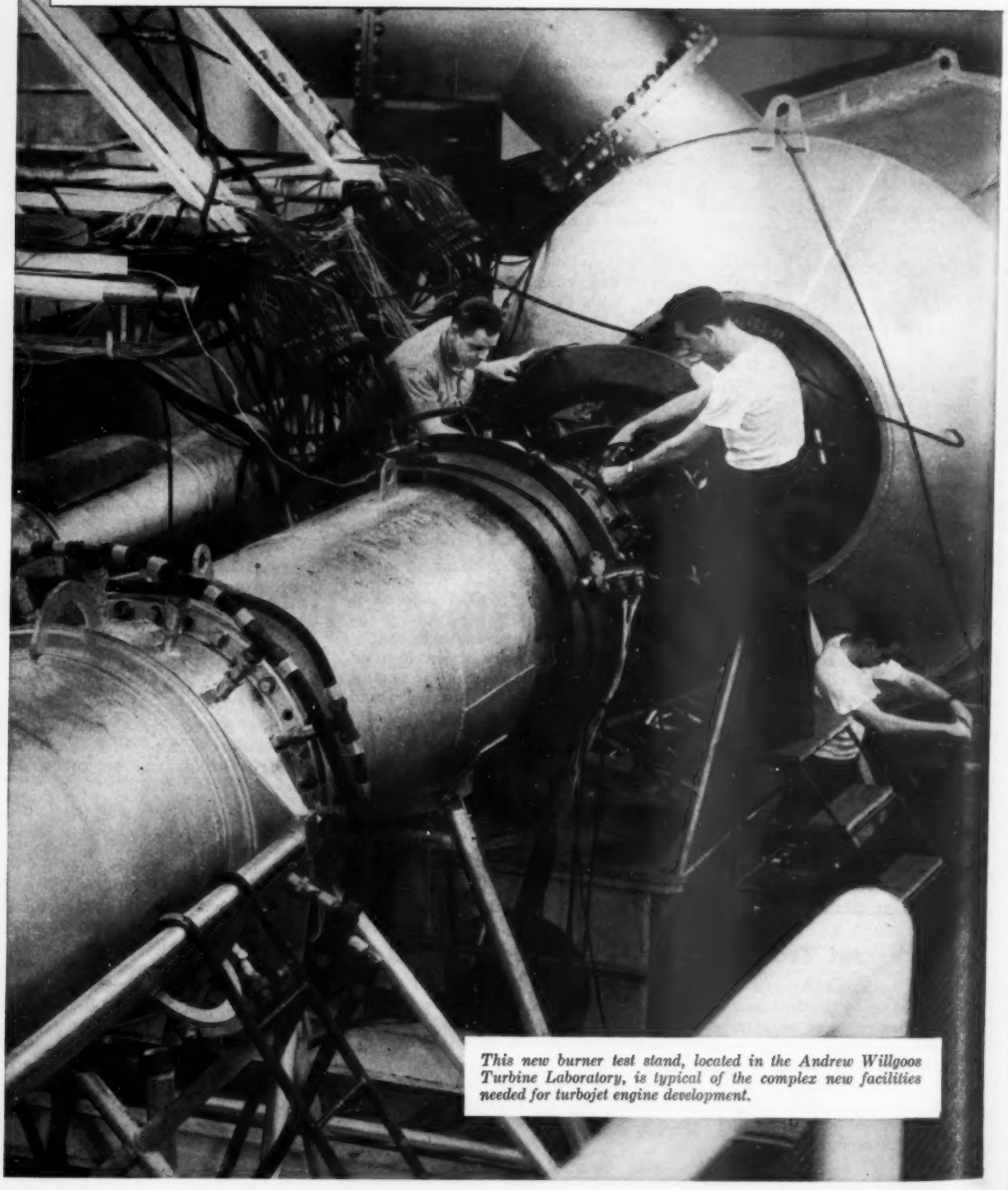
There are a number of problems attendant on flight near the speed of sound which make unique demands on the aircraft structure—planes develop peculiar and unpredictable handling characteristics at these speeds. The CAA considers that compressibility effects should be taken into account at all speeds for planes which have a design dive speed in excess of Mach 0.65. Equally important is the structural

Jet Transports – One a Week

Lockheed Aircraft Corp's activity in the jet transport field is pointed up by the disclosure that the company's preliminary engineering staff has produced an average of one new jetliner design every seven working days for the past eight years—a total of 300 since the first came off the drawing board in April, 1945.

For each design there has been a general arrangement drawing showing not only the over-all configuration of the plane but also the location of its principal components and a layout of passenger and crew equipment.

FOUR-FOLD EXPANSION OF



This new burner test stand, located in the Andrew Willgoos Turbine Laboratory, is typical of the complex new facilities needed for turbojet engine development.

EXPERIMENTAL FACILITIES

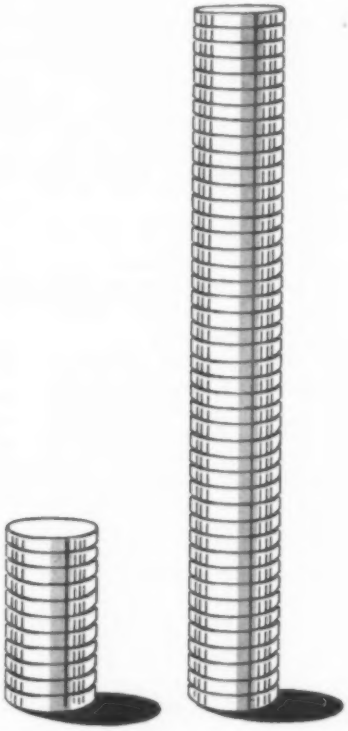
For New Aircraft Engine Development

TODAY, more than ever, high achievement in aircraft engine development demands tremendous experimental facilities. This is especially true at Pratt & Whitney Aircraft where engines of greater and greater power are being developed for the military and commercial needs of today —and tomorrow.

At the close of World War II, Pratt & Whitney Aircraft was the world's foremost piston engine builder. Naturally its experimental facilities were extensive. But today's broad program in the turbojet, turboprop and ramjet power plant fields has required an enormous increase in such facilities . . . at a dollar investment four times as great now as in 1945.

Our multi-million-dollar Andrew Willgoos Turbine Laboratory, the most complete privately-owned turbine engine test laboratory in the world, is a major example of these post-war facilities. Here experimental jet engines or individual parts of engines are tested and developed under an infinite variety of temperatures and simulated altitudes. In the Willgoos Laboratory, and in more than a score of other new laboratories and test facilities, power plant designs of the future are explored and proved.

Constant expansion of experimental facilities is only one aspect of aircraft engine manufacture, but it illustrates an entire industry problem. It helps demonstrate, too, why —today as always—dependable engines take time to build.



The above chart illustrates the huge increase in Pratt & Whitney Aircraft's investment for experimental and test facilities from January 1945 to January 1953. In 1945, we built only piston engines. Today, our program also includes turbojet, turboprop, and ramjet engines. This four-fold expansion covers only experimental and test facilities—it does not include additional heavy investments in new production facilities.

Pratt & Whitney Aircraft

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ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

strain imposed by turbulence and clear-air gusts at very high speeds, and the CAA has made a number of relevant recommendations.

In the general consideration of material strength properties and design values the CAA proposes that account should be taken of the temperature at which the structural element will operate when selecting design values (it is anticipated that sustained atmospheric temperatures at least as low as -80° F. will be encountered; also that adiabatic effects will result in increases in local skin temperatures and allied structural elements which automatically will call for some reduction in mechanical property allowables).

The CAA urges that special attention be paid to the design detail of surface and other mechanical control systems to assure their freedom from binding or other malfunction at temperatures down to at least -80° F. and possibly lower; similarly hydraulic and pneumatic systems should be designed for operation at all reasonably foreseeable operating temperatures.

Where direct actuation of control surfaces by the pilot through a mechanical system is not employed, a standby mechanical system or independent alternate system should be provided for use in the event of a failure of the control system provided for control surface actuation by the pilot.

Electrical Systems

Special care is required when designing the electrical system, since at high altitudes the electrical insulating quality of air is reduced. This makes possible, in unpressurized areas of the aircraft, electrical short-circuits and arcing.

Another design problem involves the landing gear retraction mechanism, wheel well doors, and supporting structure. The high take-off, approach, and landing speeds of jet planes require these components to be designed for the combination of friction inertia, brake torque, and air loads occurring during retraction and extension (so as to cut waiting time for speed to be reduced to the safe gear-extended speed after descent at high speeds).

The CAA considers that the hazards involved in exceeding design or demonstrated airspeeds make it necessary to consider the need for an automatic speed control device. The rate of motion of surfaces used for speed control, such as dive brakes, in response to the operation of the control should be such as to obtain satisfactory control effect. If an automatically operated surface is provided, it should be capable of being manually operated and overridden by the pilot.

Turbine powerplant problems have been given much attention by the CAA. For instance in order to ensure rapid acceleration or recovery of thrust it is proposed that demonstrations be made in flight that the fuel, control, and induction systems are such that the engine will accelerate satisfactorily when the throttle is suddenly opened at any speed, during which a period of two to three seconds is allowed from idle position to maximum continuous power. The engine control system should possess absolute integrity of control and be virtually foolproof.

Limited Altitudes

To avoid complete combustion failure at high altitude, the CAA believes that further study will be required. It is considered at this time that in the event it is determined that the altitude is the critical factor causing blow-outs, it may be necessary to limit the operational altitude of the aircraft involved to a level at which this trouble no longer occurs.

Another consideration in turbine engines is the possibility of compressor or blade failure causing the piercing or rupturing of the engine casing in such a way as to create an uncontrollable hazard. To counter this the CAA proposes that the casing or housing surrounding the compressor and turbine blades should be of sufficient strength to contain broken blades or blade pieces within the engine in the event of such failure.

The engine manufacturer should demonstrate compliance or otherwise substantiate by means of valid service experience or analysis. The CAA is also concerned with the possibility that the turbine engine vibrations will produce fatigue damage of engine components, resulting in power failure and structural damage during flight.

On the important question of engine location, the CAA is concerned lest in case of turbine wheel failure on one engine, damage may occur to other engines, primary structures, primary controls, fuel tanks, and personnel.

The proposed policy is that the region of hazard with respect to possible disc failure should be an area between the plane of the turbine disc and the surface generated by a line passing through the center of the disc and making an angle of five degrees forward or aft of the plane of rotation. The subtended arc of damage in the region of hazard should be as small as possible—a desirable goal is the subtended arc of damage now presented in present-day piston-engine transports.

Other considerations regarding turbine engines to which the CAA has given considerable attention include restarting in flight, surging, control of engine rotation, fuel flow rate, boost pump operation, and fire hazard. The last point leads to the question of the special fire hazard of low-volatility fuels: gasoline forms such a rich mixture in fuel tanks that ignition is impossible, but kerosene-type fuels form explosive mixtures at altitude and this will require special measures to prevent hazards from lightning strikes and other sources of ignition.

The CAA considers that fuel tanks should be protected against damage from ground impact in survivable crashes and should be capable of sustaining the loads resulting from decelerations which may occur in such accidents. Fuel tanks should not be located close to personnel compartments unless a high degree of crash resistance is demonstrated to the extent that the fuel will be contained without leakage in the event of a survivable crash.

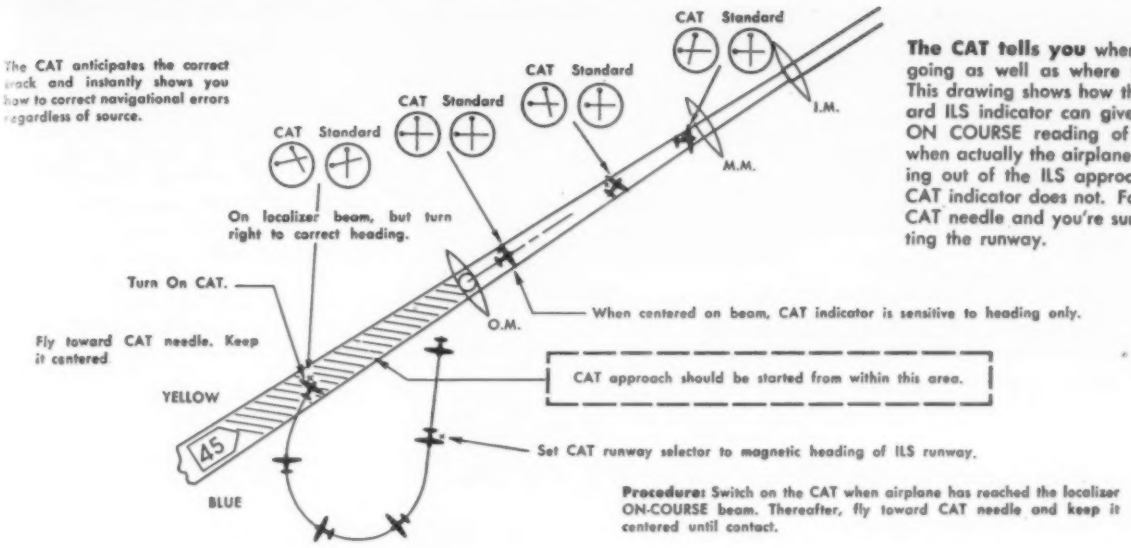
The CAA does not anticipate that the introduction of jet transports will cause any major difficulties in traffic control, but the matter of high fuel consumption combined with high altitudes is another matter. It is quite possible, for example, that jet transports will begin approaches routinely from some 40,000 feet, where any necessary holding will consume less fuel than at lower altitudes. If such approaches are mixed with the present kind of piston-engine aircraft holding and approach patterns, there will be some real traffic-control headaches, Civil Aeronautics Administrator Lee believes.

Glide Too Steep

The present glide slope is too steep for jetliners. In order to compensate for the slow acceleration characteristics of jet engines, and to keep the plane well placed for missed approach, between 70 and 80% of the engine speed must be used during the approach. This makes a flat approach necessary to keep the aircraft speed within reasonable limits. Dive brakes may prove helpful here, but they must be capable of rapid retraction in case a climbout is necessary.

Extreme high-altitude flight introduces radio and navigational difficulties. Above 35,000 feet so many VHF stations are received simultaneously that the chatter sounds like a ladies bridge club, according to Lee. On medium frequencies the presence of ice clouds severely obscures reception and often makes use of such frequencies impossible. Incidentally, jet aircraft do not show as effectively on radar screens as do piston-engine planes.

Lee concluded his round-up of the jet transport situation by asserting that the CAA would exert every effort to make the U.S.-constructed jet transports not only the fastest in the world, but also the safest. • • •


The CAT anticipates the correct track and instantly shows you how to correct navigational errors regardless of source.
CAT Standard
CAT Standard
CAT Standard
CAT Standard
I.M.
M.M.
O.M.
On localizer beam, but turn right to correct heading.
Turn On CAT.
Fly toward CAT needle. Keep it centered.
When centered on beam, CAT indicator is sensitive to heading only.
CAT approach should be started from within this area.
YELLOW
45
BLUE
Set CAT runway selector to magnetic heading of ILS runway.
Procedure: Switch on the CAT when airplane has reached the localizer ON-COURSE beam. Thereafter, fly toward CAT needle and keep it centered until contact.

The CAT tells you where you're going as well as where you are. This drawing shows how the standard ILS indicator can give you an ON COURSE reading of position when actually the airplane is heading out of the ILS approach. The CAT indicator does not. Follow the CAT needle and you're sure of hitting the runway.

C-A-T Spells Safer, Easier Landings

Production under way at Wilcox on Computing Automatic Tracker for airline and corporate aircraft.

By William D. Perreault

THE SIMPLEST and lowest priced steering aid to ease the pilot's load during the critical period of approach and landing yet introduced has been put into production by Wilcox Electric Company at Kansas City, Mo. Known as the Computing Automatic Tracker (CAT), the Wilcox unit is a two-tube computer weighing eight pounds and selling for $495 F.O.B. Kansas City.

In recent weeks the Wilcox unit has been demonstrated to pilots of Pan American World Airways, American Airlines, and Trans-Canada Airlines. But the CAT is not exactly new. Eastern Air Lines has been using the Wilcox steering computer for more than a year in scheduled service and Don McRae, EAL's superintendent of communications, has led industry support of the project. Eastern has all of its four-engine aircraft equipped, and hopes to equip the rest of its fleet by summer.

Essentially the Computing Automatic Tracker uses data from the localizer receiver of the instrument landing system and the flux gate compass to provide a simple left-right needle indication showing the pilot when he's off course and when and how much to turn to get back on course. It is designed to aid the pilot in that short period, measured in seconds, after he turns onto the localizer course outbound of the outer marker.

This means the Wilcox CAT is in competition with two other prominent computers currently earning industry interest and acceptance: the Sperry Zero Reader and the Collins Steering Computer. The CAT does not incorporate all of the refinements of either of the latter units. Wilcox, by its own description, sacrifices some of these refinements in design in exchange for improvement in "reliability, maintenance, and simplicity of installation."

How it Operates

Essentially CAT provides the pilot with a simple summation of heading and position signals generated in the localizer receiver and gyrocompass. To do this the pilot uses a runway selector switch, normally incorporated in the regular omnibearing selector of the VOR system, to set in the magnetic heading of the ILS runway on which the approach is to be made. This controls the voltage output of a transformer in the selector switch and generates a signal in proportion to the difference in selected runway heading and the aircraft heading.

By means of a phase-sensitive rectifier circuit in the computer, the heading displacement voltage is combined with the localizer receiver output voltage. The needle of the deviation indicator is then actuated by the combined signal of the heading displacement signal (measured by the gyrocompass course selector) and the localizer position voltage.

If the heading of the aircraft is such that it is continually reducing the off-course position relative to the localizer, the DI needle is centered. The pilot always flies toward the needle.

It is as if the deviation indicator's vertical needle were recording the position of the aircraft at some point farther along the approach path, anticipating changes in aircraft heading and position which will result from existing control settings.

The eight-pound computer, mounted in the radio rack and containing only two tubes, is the principal item of new equipment. Otherwise CAT uses one of the existing ILS localizer receivers and deviation indicators and the gyro type of compass. One three-way switch is provided to permit the pilot to select which of the systems (VOR, ILS, or CAT) will be shown on the localizer needle. Another three-way switch permits the pilot or mechanic to apply test voltage.

The CAT operation in no way affects normal operation of the co-pilot's ILS. Even so an additional switch provided on the left control wheel makes it possible for the pilot to switch from CAT to ILS by simply pressing a button. In this manner he can monitor his position and check for cross wind.

CAT sensitivity can be set to match the aircraft's speed characteristics. Course sensitivity is usually set to allow for a reasonable cross wind. One operator uses a setting which permits aircraft alignment on a 150-foot runway with a seven degree cross-wind.

• • •

HARTZELL PROPELLERS installed on Riley Twin Navion Conversion feather in five seconds. Dead engine turn is possible without over-yaw.

Twin Navion Lease Plan Set Up by Riley

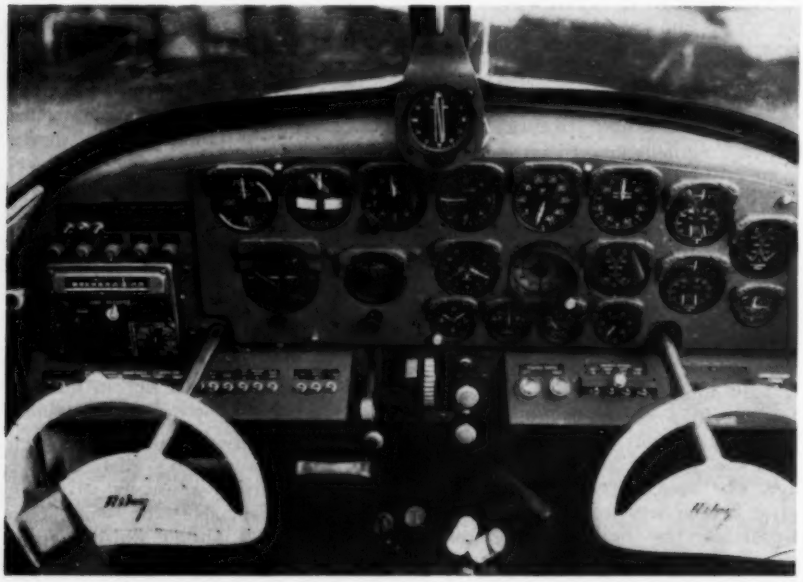
Direct manufacturer-to-user rental program offers economical method of testing value of executive planes.

By Lois C. Philmus

A UNIQUE PLAN to stimulate additional use of aircraft in the business and industrial world has been conceived by Jack Riley, head of Riley Aviation Manufacturing, Fort Lauderdale, Fla., owner of the Twin Navion Conversion. Believed to be the first of its kind, the plan encompasses a direct manufacturer-to-customer lease arrangement under short- or long-term contract. About 100 Twin Navions will be made available for this program, which is aimed at three specific groups:

• **The skeptics:** Companies unsure of the justification of purchasing aircraft, which would like to experiment on the actual utility of such operations at a relatively lower cost than that involved in purchasing of aircraft.

• **The short-term users:** Companies that do not need an aircraft on a full-time basis but could make use of one in connection with an outside contract or particular project, which might run from six months to two years. Twin Navions would be available on rental basis for term of contract for expediting equipment, transporting engineers for consultation, etc. Rental costs, in this instance, could be accounted for in the company's original contract estimates, written off as a specific business tool.



STANDARDIZED INSTRUMENT panel is feature of Twin Navion, with instruments installed in planned sequence.

• **The economy-minded:** The corporate aircraft user currently operating larger multi-engine equipment could make economy trials with the Twin Navion for cost comparisons. Many in this group often operate a Lodestar or DC-3 for as few as three or four passengers.

The service is scheduled to start in June for those with leases now. The leased aircraft will be earmarked for lease service on the assembly line. In this way, the first lessees will be able to designate radio equipment and interiors desired.

Cadillac Rental

Cost of renting a Twin Navion compares favorably on a per-mile basis with Cadillac rental. In laymen's language, Riley stated, rental would be 12c per mile. This, in hours, comes to a minimum of $900 to $1,000 for 50 flight hours per month.

The lease contract obligates Riley to furnish new engines as needed, conduct propeller overhaul, and perform major maintenance. The lessee would be responsible for routine maintenance and would furnish his own gas and oil.

As this new program was reported, Riley also updated the status of production of the Twin Navion conversion since announcement of the $1,900,000 contract with Temco (American Aviation, March 16). The initial contract calls for Temco to turn out a minimum of 100 aircraft in the first 12 months, but Riley states that all indications are that this will be doubled within the near future.

One a Day

Currently Temco is scheduled to receive two Navions a week, but is capable of handling one a day. The Riley Fort Lauderdale plant will be maintained for assembly work and maintenance. The potential of future conversions is bright, as there are 2,300 single-engine Navions flying today. The first six conversions will be off the line this April, bringing the total completed to 14 since April, 1952. First one off the line goes to the Harry L. Edwards Drilling Company of Houston.

The contemplated switch from 140-hp to 150-hp Lycoming engines will take place after the first 20 conversions are off the Temco line. The engine change boosts the conversion price from $24,850 to $25,850, exclusive of radio equipment. There is currently a 20-plane backlog for the engine switch. To further increase performance with the 150-hp engines, a clam-shell cowling with augmentor cooling will be installed.

Pilot Report

Twin Navion Conversion (140 hp. engines)
National Airport, Washington, D. C.

• **Ground handling** has been simplified with installation of toe brakes which gives plane three-way steering on ground, as rudder and throttle also can be used.

• **Take-off run shortened** over 150 feet. Compared to the single-engine Navion's 690-foot getaway, we used only about 500 feet of the 5,210-foot NW runway at National into a mild head wind.

• **Climbed** at 1,000 feet per minute, indicating a speed of 120 mph.

• **Cruised** at 6,000 feet with 65% power, indicating 148 mph under ideal flight conditions. Recommended cruise is 175 mph at 8,000 feet with 70% power. Range is 700 miles, with service ceiling over 20,000 feet.

• **Standardized instrument panel** is well arranged and is easy to monitor. Throttle and mixture control are conveniently located between seats.

• **Feathered** Hartzell all-metal, constant-speed, full-feathering propeller in five seconds from time throttle was pulled back. Maintained 6,000-foot altitude with no deviation and cruised at 112 mph at 65% power. Windmilled out in about six seconds after pushing starter button.

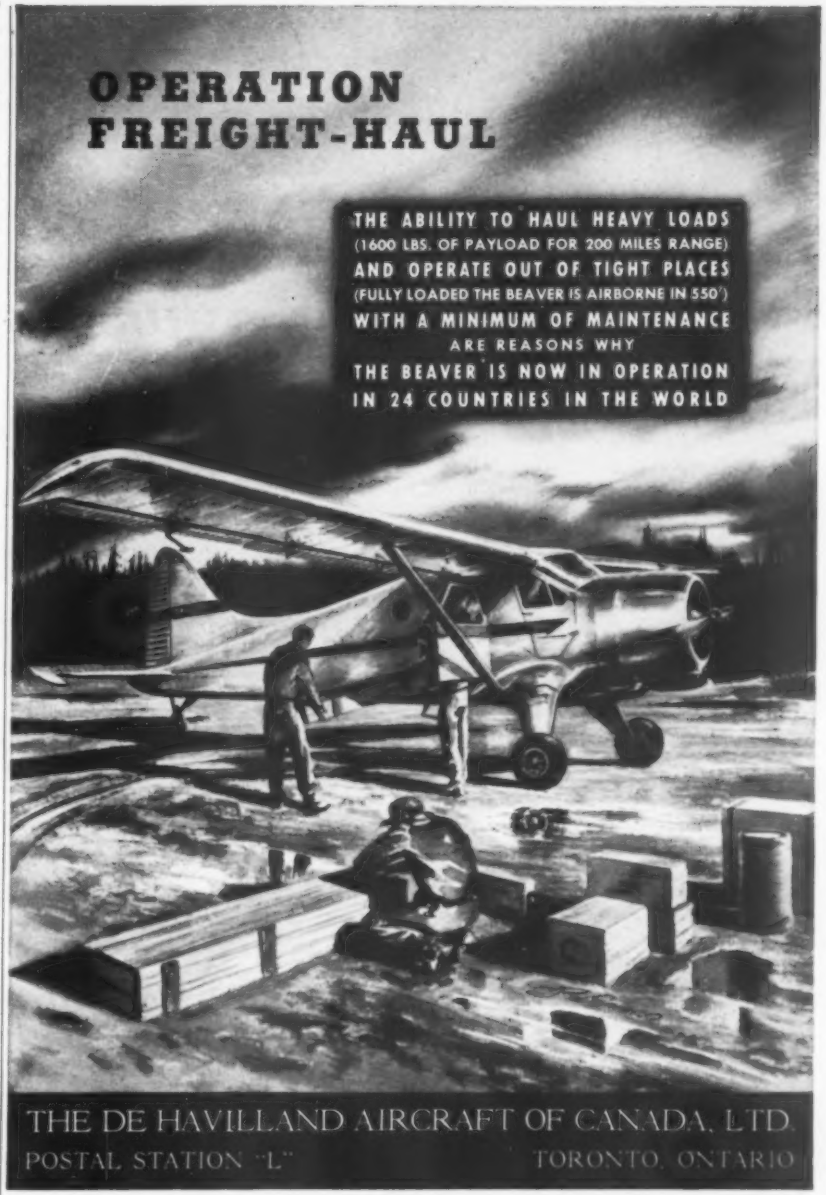
• **Dead engine turn** was accomplished to the left with the prop feathered without opposing yaw.

• **Stall warning** is "built into" plane. As you approach stall position, slight buffeting gives plenty of time for correcting.

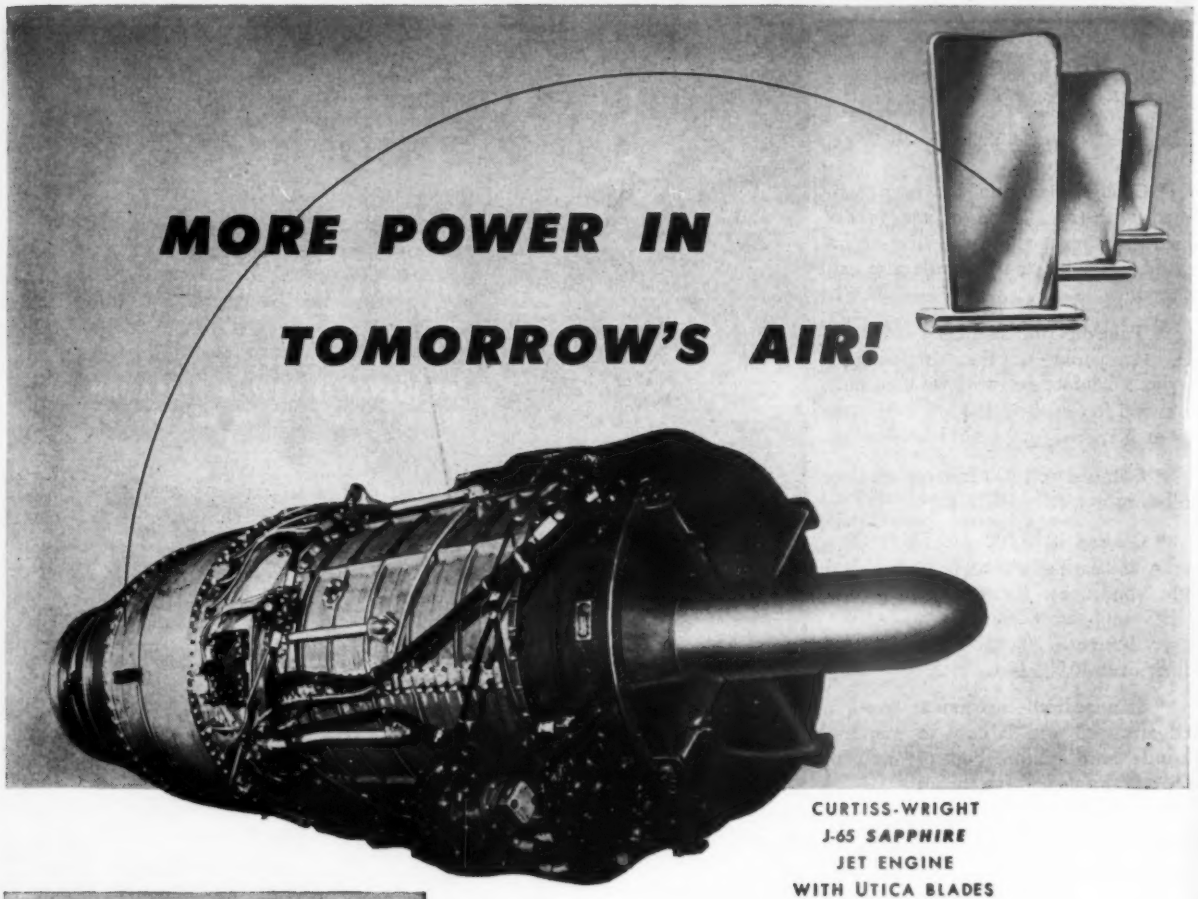
• **Landed** into cross-wind with very little noticeable correction called for, at a speed of about 59 mph. Landing lights on nose are improvement over former installation on landing gear.

• **Cabin noise** has been cut about 50%. Normal conversation was possible.

• **Comments:** Back of wing *visibility* not too good. *Maintenance* simplified by installing cannon plug for one connection for all wires through firewall. *Nose area* utilized for additional radio installation and additional baggage space. *Vertical fin* increased about 40% in area and conversion of *horizontal stabilizer* to vertical slowed landing about five mph and increased cruise about eight.


OPERATION
FREIGHT-HAUL
THE ABILITY TO HAUL HEAVY LOADS
(1600 LBS. OF PAYLOAD FOR 200 MILES RANGE)
AND OPERATE OUT OF TIGHT PLACES
(FULLY LOADED THE BEAVER IS AIRBORNE IN 550')
WITH A MINIMUM OF MAINTENANCE
ARE REASONS WHY
THE BEAVER IS NOW IN OPERATION
IN 24 COUNTRIES IN THE WORLD
THE DE HAVILLAND AIRCRAFT OF CANADA, LTD.
POSTAL STATION "L" TORONTO, ONTARIO

MORE POWER IN TOMORROW'S AIR!



CURTISS-WRIGHT
J-65 SAPPHIRE
JET ENGINE
WITH UTICA BLADES

The Republic F-84-F Thunderstreak powered with Curtiss-Wright *Sapphire* outperforms any airplane in its class—in speed, range, hitting power . . . in every way.

Speed of a fighter plus a heavy bomb-load—that's the new Martin built B-57 twin jet bomber which will be powered with Curtiss-Wright *Sapphire* engines.

Twenty-five percent more powerful than jets it is replacing—that's the story on the great new *Sapphire* engine. And here's the *inside* story . . .

Deep down in the heart of this *Sapphire* engine are turbine blades forged and finished by UTICA. They're spinning like crazy in a thundering hurricane of swirling gases. These UTICA blades, precisely forged —accurate to a thousandth—harness this blast of gases into a giant propulsive power that drives some of the world's best high-performance aircraft!

We're very proud that Curtiss-Wright picked us to supply turbine and compressor blades for the *Sapphire* engine. UTICA jet blades are but one sample of the exacting precision forgings made possible by our 57 years of forging experience . . . teamed with finest modern equipment . . . backed by UTICA's continuous drive for ever finer quality.

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A MILITARY COMMENTARY

The British Are Playing for Keeps

HAVING been off for the past month on a tour of the aircraft industry of Europe and the U.S. we have lost touch with the latest developments in the military field. Permit us, therefore, to wander into the commercial field and add a few comments to a topic which has almost been commented to death—the jet transport situation.

Our British cousins are somewhat annoyed with us these days. To be specific they are annoyed with the Civil Aeronautics Administration for what appears to them to be a reluctance to certify the de Havilland Comet III on nationalistic grounds rather than the safety considerations involved.

The annoyance started with the return to England of R. E. Hardingham, secretary of the British Air Registration Board, after his talks with the CAA relative to certification of the Comet III. Hardingham himself told us in London that, although his talks with the CAA left something to be desired, he felt that some progress had been made and that the problems in certifying the Comet III were not insuperable.

But the British press has taken a more rabid view and conveys the idea that the CAA is deliberately planning to withhold certification as a trade weapon. This opinion has found rather wide acceptance in British aviation circles. There are even some dark hints that CAA is working hand in glove with the U.S. aircraft manufacturers.

Two major conversation pieces are CAA's fears of a pressurization failure at altitude and its worry about deceleration on the runway. Anent the former, the British point out that this was also a topic of considerable debate when the Lockheed Constellation went into service but that, after millions and millions of Constellation passenger-miles, the problem has never developed. They concede that the Comet operates at much higher altitudes than the Connie, but add that the art of pressurization has also progressed.

As to runway deceleration, they point out that airplanes operated for years on brakes alone before the invention of the reverse-pitch propeller, conceding that landing speeds were much lower, but adding that runways were much shorter, too. (The Comet II and III models, incidentally, will have a new braking device similar to the decelostat used on the Boeing B-47 jet bomber.)

We had an opportunity to investigate the deceleration problem first-hand in France, when we flew aboard a training flight on a Comet IA of Union Aeromaritime de Transport, French independent airline. UAT was checking out a group of pilots in landing and take-off procedures. We flew to the French test base at Bretigny, south of Paris, and shot about 15 landings.

On a normal landing, with touchdown near the beginning of the runway, we observed that the plane was able to come to a complete stop at about the halfway mark of the 8,500 foot runway. Even on two no-flap landings we used not more than three-quarters of the runway.

Only once throughout the training flight was there a landing which we would have called critical, and that was obviously the fault of a pilot who apparently though he was still flying a DC-4 and overshot by a wide margin. On this occasion, the Comet proved its ability to get off the ground in a short distance when the pilot was forced to apply power after touching down beyond the half-way mark.

The jet transport has now become almost a national religion in Britain. The British are convinced (and it might be argued that they have good reasons for the conviction) that they will dominate the commercial transport market from here on out.

As for the old argument about their inability to mass produce, they answer it by saying that the market for jet transports in the near future will not be as large as it was for piston-engine aircraft and their facilities can easily handle all the needed production once they get rolling. They are prepared to use the pool system of manufacture if necessary, with two or more plants handling production of a single type, such as is now being done with the de Havilland Comet.

Lower Labor Costs

They argue against the need for assembly-line production with its attendant high tooling costs (and at least one American transport manufacturer concurred in this argument). And they point out that lower labor costs give them a decided advantage in pricing their aircraft. Add to this their admitted lead in the field and it makes for a convincing argument.

One Britisher prominent in the aircraft production field, George Edwards, general manager of the aircraft division of Vickers-Armstrongs Ltd., summed it up in these words:

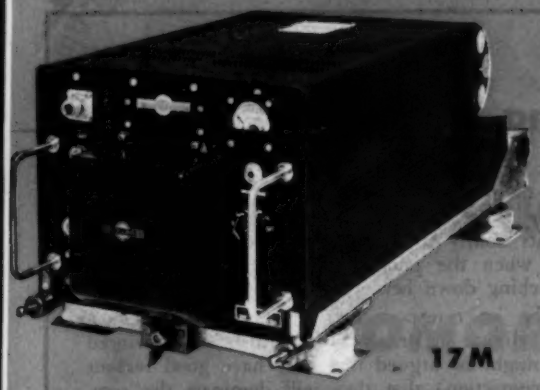
"There has been a very heartening overall improvement in British aircraft production techniques, including accessory manufacture. Britain can become a great air power just as it became a great sea power."

The French, too, are definitely counting themselves in the jet transport race. To match their world economic position, they have evolved a new philosophy of jet transport production. They do not want to compete with either the British or the U.S. in the large, long-haul, high-speed jet field, so they are concentrating their efforts on development of a short-haul jet.

General consensus in other countries is that there is not much of a market for this type of transportation, but the French feel that it will develop. They have two such airplanes on the drawing boards and are going ahead with at least one of them and possibly both.

Throughout the European aircraft industry there is tremendous interest in what the U.S. will do in the jet transport field. Even after a swing through the U.S. industry, we can offer little enlightenment. With the exception of Boeing Airplane Co. we appear to be no farther advanced in the jet field than we were a year ago. It is, of course, still far too early to concede the race to the British (and maybe the French), but it must certainly be admitted that we have little basis for the smug nationalistic attitude of "We'll catch up when the time is ripe."

. . . JAMES J. HAGGERTY, JR.



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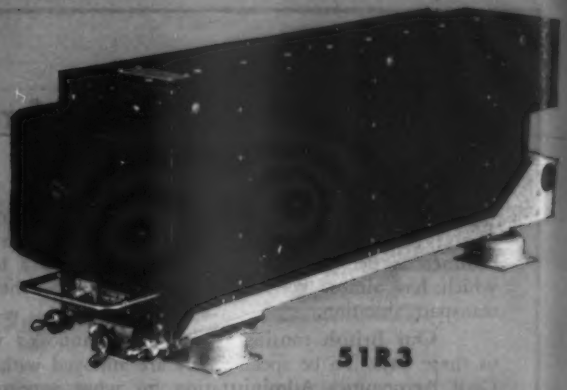

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17M 360-CHANNEL VHF AIRBORNE TRANSMITTER — Introducing another Collins quality product in the aviation field: 17M VHF Transmitter. Full 360 channels in the frequency range of 118.0-135.9 megacycles. 50 watt power output with phone emission. Meets ARINC Spec. #520.

51X 360-CHANNEL VHF AIRBORNE COMMUNICATIONS RECEIVER — Companion to 17M Transmitter. Complete new design to meet ARINC Spec. #520 for 50 kc bandwidth. Same famous Collins fingertip remote control circuitry as used for 51R receiver and adopted as standard by airborne equipment industry. The Collins 51X has the sensitivity, selectivity and spurious response rejection characteristics required for flight and airport traffic control.

51R-3 AIRBORNE NAVIGATION RECEIVER — Here is the receiver that fulfills the navigation and communication receiving requirements of all types of military, commercial, and private aircraft using the 108 to 136 megacycle band. (The 51R-3 provides for omnirange, localizer for instrument landing and communication reception.) Channel selector for the equipment is arranged to accommodate the addition of a glide slope receiver and distance measuring equipment. Thus, choice of appropriate localizer and glide slope channels is afforded from a single control unit. The 51R-3 Receiver is engineered to provide the ultimate in accuracy and dependability in all types of aircraft.

a COLLINS report on
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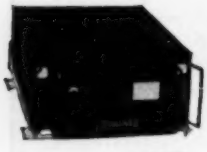

618S

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618S 144-CHANNEL HF TRANSCEIVER — Airline transmitting-receiving equipment with 100 watt power output on 144 crystal controlled channels. Automatically tuned elements insure maximum flexibility and high power output.

18S-4 10-CHANNEL — 20-FREQUENCY TRANSCEIVER — Transmitter-receiver for commercial or executive aircraft. Frequency range of 2.0 to 18.5 megacycles. One hundred watt power output.

180L-2 AUTOMATIC ANTENNA TUNING UNIT — Automatically matches 18S or 618S output to aircraft antenna.

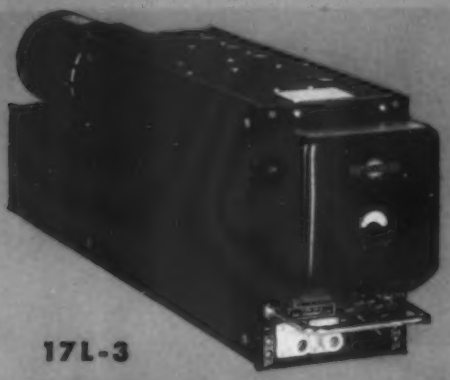
COLLINS PRECISION TEST EQUIPMENT

478B GLIDE SLOPE SIGNAL GENERATOR — This unit provides crystal controlled test signals for bench-testing Glide Slope Receivers in the band 329.3 to 335.0 mc.

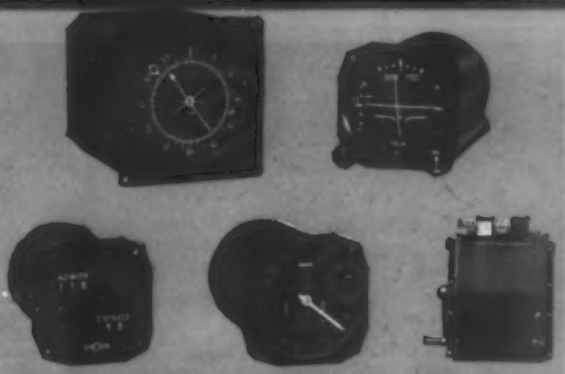
478C IFS TEST EQUIPMENT — Bench tester for Collins IFS Computer, automatic pilots and other flight director equipments.

479T-2 SIGNAL GENERATOR — This is precise ramp-test equipment for airborne VOR localizer and glide slope receivers.

479S-3 AUDIO SIGNAL GENERATOR — Generator is used in precision bench testing omni-range, localizer and glide slope receivers. Output signals for VOR, localizer, and glide slope audio circuit investigations are provided.



17L-3



COLLINS INTEGRATED FLIGHT SYSTEM AND NAVIGATION COMPUTER

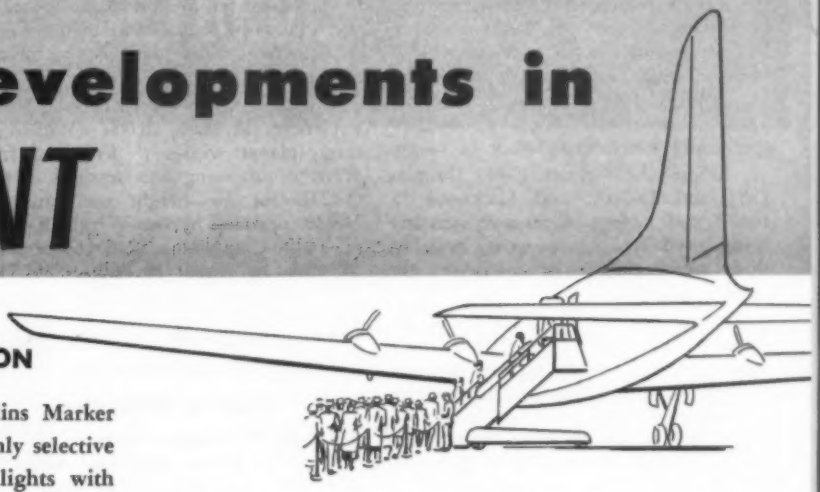
17L-3 180-CHANNEL VHF AIRBORNE TRANSMITTER — Frequency range is 118.0 to 135.9 megacycles, and all 180 channels are easily selected on a simple, positive remote control system. Power output is conservatively rated at 8 watts. Hundreds of these dependable transmitters are now furnishing consistently reliable service.

17L-4 360-CHANNEL VHF AIRBORNE TRANSMITTER — Transmitting facilities are provided on all channels reserved for aircraft communication in the VHF band. Ease of operation and dependability are the same as the Collins 17L-3, but power output is increased to approximately 25 watts and 50 kc channel spacing is provided.

INTEGRATED FLIGHT SYSTEM — Simplifies ILS approaches by presenting precisely computed steering information in conjunction with simplified pictorial type instruments. Instrumentation also simplifies enroute navigation.

NAVIGATION COMPUTER — The Collins NC-101 Navigation System provides the pilot continuous position information. Required data is fed into the electronic computer on a previously prepared punch card. Punch card then activates the Computer, giving the pilot a continuous fix measured in miles from his destination along a chosen course.

on electronic developments in
0 EQUIPMENT



NEW AVIATION AIDS IN PRODUCTION

51Z-1 MARKER BEACON RECEIVER — Collins Marker Beacon Receiver is completely dependable, highly selective and free from spurious response. Operates lights with minimum "twilight" indication.

51V-2 GLIDE SLOPE RECEIVER — The 51V-2 is designed for reception of 90/150 cps tone modulated glide slope signals on any of the twenty channels in the UHF range of 329.3 to 335.0 megacycles.

Collins designs and manufactures a complete line of radio communications equipment for the aeronautical services. Your inquiries are welcome and we suggest you investigate such new developments as Collins TVOR and microwave for airlines. Please specify the type of descriptive literature desired.

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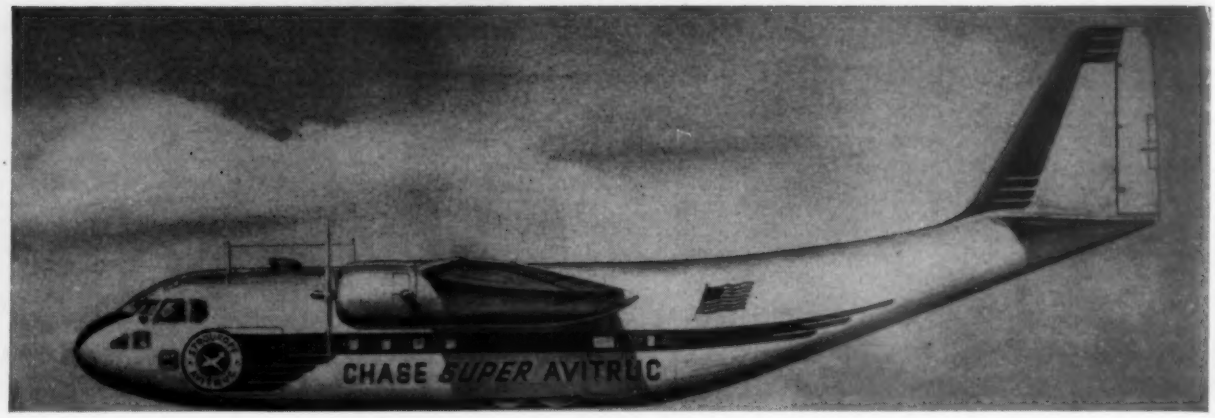

ARTIST'S VIEW of the Chase MS-19, new cargo transport.

New Chase Transport Aims at Cargo Market

The MS-19, commercial version of C-123B assault transport, has been studied by Eastern Air Lines.

By ROBERT M. LOEBELSON

WHILE much has been said about three forthcoming types of commercial aircraft in the U. S.—the jet transport, the corporation plane, and the DC-3 replacement—comparatively little has been written about a fourth type of airplane which seems certain to be flying in great numbers within a very few years. That is the airplane designed specifically for transportation of cargo.

While the Curtiss C-46, Douglas C-54 and DC-6A, and Lockheed L-1049B and a few others are currently being used for this purpose, none of them seems completely satisfactory for cargo operations.

Virtually every freight airline in the country and those which handle both passengers and air freight are anxious to find an economical aircraft capable of operating from presently used and some smaller airports. For those lines, Chase Aircraft Co. of West Trenton, N. J., thinks it has the final answer in a commercial version of its C-123B assault transport.

As a matter of fact, Chase officials, notably Vice President and Chief Engineer Michael Stroukoff, have been discussing such a plane with Eastern Air Lines, Slick Airways, and various South American and European carriers for periods dating back as much as three years, and will be ready to offer the aircraft for sale as soon as enough production space becomes available.

(Chase expects its new $2 million, 160,000-square-foot facility at Mercer County Airport to be completed by the end of the year, and the county is putting up another 60,000-square-foot building which it will lease to Chase. This plant will first build C-123B components for assembly of the plane by Kaiser-Frazer Corp. at Willow Run, but K-F will gradually phase in its own components, leaving Chase with plane-building capacity.)

Stroukoff, convinced that the U. S. will need at least 20,000 commercial cargo planes within a period of five years, is proposing two versions of the C-123B for air freight use, one the MS-19, powered by two Wright R-3350-32 Turbo-Compounds, and another, the MS-19A, by a pair of Allison 501-DA T38 turboprop engines. The military model, which uses Pratt & Whitney R-2800's, would differ from the MS-19's in that the latter planes would:

Points of Difference

- **Be 50″ longer** than the C-123B, 20″ added before the wheel well, the other 30″ just behind the well.
- **Have a tandem landing gear,** compared with the conventional gear on the C-123B.
- **Carry a payload of 25,000 pounds,** as against the designed payload of 16,000 pounds in the C-123B.

Chase officials are naturally reluctant to discuss the price of such an airplane, but point out that the modifications from the military craft are comparatively minor. As a result virtually all the development costs of the MS-19 and 19A will have been taken care of under the USAF contract. One Chase official gave an unofficial estimate of "about the same as a Convair Liner," i.e., roughly $600,000.

Biggest advantage of the MS-19, as Stroukoff sees it, would be the aircraft's ability to land and take off, not only at every airport currently served by an airline, but also at airports in smaller cities where the runways are either very short or are little more than level grass fields. Following are the design specifications of the Chase cargo liner:

Gross weight—63,000 pounds.
Rate of climb (sea level, normal rated power)—1,370 feet per minute.
Cruising speed at 10,000 feet—243 miles per hour.
Service ceiling—26,600 feet.
Take-off distance over a 50-foot obstacle (sea level, no wind)—2,300 feet.
Landing distance over a 50-foot obstacle (sea level, no wind—1,340 feet.
Operating weight — 33,475 pounds.
Useful load at maximum (1,600 gallons) fuel capacity, including 18,674 pounds of cargo—29,525 pounds.
Cargo compartment—4,200 cubic feet.

Stroukoff's estimate of the direct ton-mile cost for the Turbo-Compound version ranges from eight cents at 50% power and a range of 500 miles to 9.3c for a 350-mile range using more power. On the T38 version, the direct ton-mile cost would be six cents for a 200-mile range and 7.25 cents for 1,000-mile ranges, he added.

Other advantages cited by the vice president (and holder of 51% of Chase's

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To protect its new fleet of million-dollar Douglas DC-6B's, Western has specified that all of them will carry fire-resistant Monsanto Skydrol* in the cabin superchargers. These new planes are for service on the Pacific Coast, and between California and Minnesota.

Western is the 15th major airline to adopt this safe, non-corrosive hydraulic fluid which is unique in its field.

Here's a digest of Skydrol's outstanding performance features:

Reg. U. S. Pat. Off.

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. . . nontoxic
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SKYDROL IS USED BY . . .
15 major airlines, domestic and foreign: American, United, National, Delta, Braniff, Western, Pan American, Panagra, Slick, Transocean, Swissair, LAI, CMA, PAL, KLM

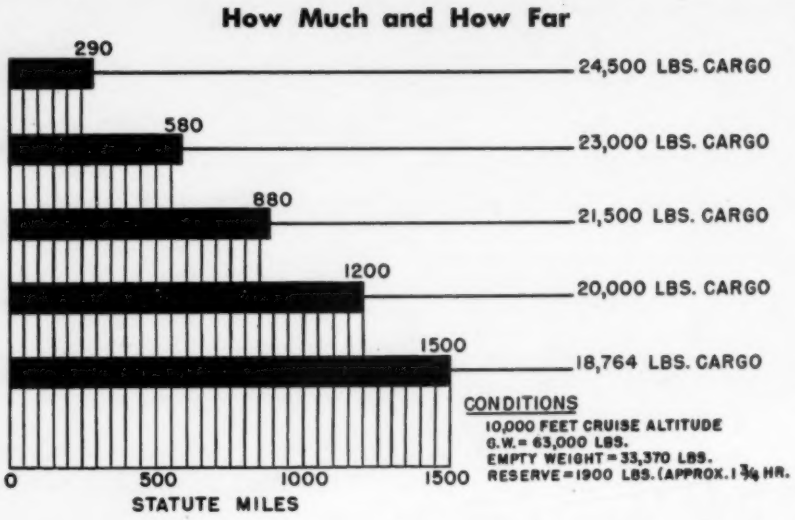
SKYDROL HAS . . .
logged approximately one and one-half million hours aloft in cabin superchargers and 100,000 hours in hydraulic systems

SKYDROL HAS . . .
double the lubricity of conventional hydraulic fluids

SKYDROL . . .
extends the service life of pumps, cuts maintenance costs

Skydrol is the only fire-resistant fluid which can be used in both cabin supercharger and hydraulic systems, as well as oleo struts. Ask for information on Monsanto's Pydraul* F-9, fire-resistant fluid for hydraulically operated industrial equipment.

THIS BOOK containing complete Skydrol specifications and test data, will be sent to airline officials or aircraft owners on request. Write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 800 North Twelfth Blvd., St. Louis 1, Missouri.



PERFORMANCE of the MS-19 in terms of payload and range is shown in chart.

stock) for the MS-19's would be the ease with which the plane could be loaded because the rear ramp can be adjusted to truck-bed height, elimination of special equipment like fork-lift trucks, access to cargo from the side door in front of the aircraft, and reduced manpower requirements.

All of these factors, Stroukoff feels, would help reduce the overall ton-mile cost of moving cargo by air.

When Stroukoff was asked by AMERICAN AVIATION why the MS-19's could not be built at Willow Run, where all remaining C-123B's are to be constructed, he replied that the engineering know-how on both the military and commercial planes was located at West Trenton and that actually both versions should be built there. He reported himself pretty much resigned to having the USAF plane constructed at Willow Run since the contract specifies that all but the first production model (which will probably have made its first flight by the time this appears in print) shall be made at the Kaiser-Frazer plant.

This latter point apparently has been the subject of long conversations between Stroukoff and Edgar F. Kaiser, Chase's board chairman, since the Henry J. Kaiser Co. bought a 49% minority interest in Chase two years ago. Stroukoff admitted there had been differences of opinion on the movement of Chase to Willow Run but pointed out, "It's just like a marriage. We have our fights but we always make up."

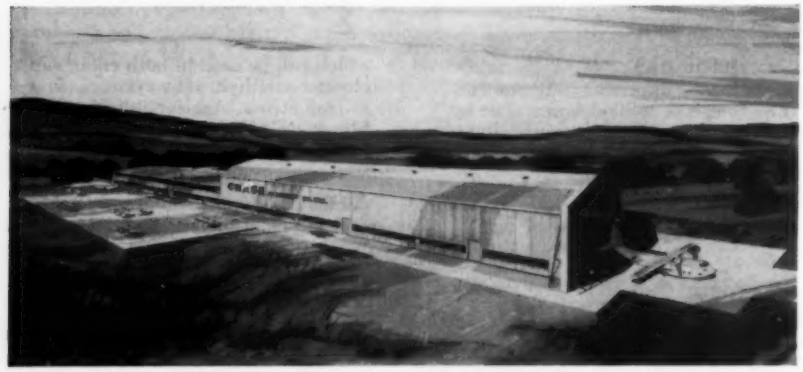
Stroukoff's conviction that Chase must retain its autonomy (and his 51% interest in the company) apparently have settled the issue, for a 54-acre site has been leased from Mercer County for 99 years and plant construction is scheduled to begin soon. The former plant was taken over by the Navy and Chase is now in temporary quarters at the airport.

At any rate, Stroukoff insists that any orders for the MS-19 will be filled from the West Trenton facility and that if and when Chase is unable to handle all orders the Willow Run plant will probably be called in as a subcontractor and asked to produce it.

The military plane, which K-F will start building in September, will gross 30,800 pounds, compared with 28,600 pounds in the XC-123. About 5,000 pounds in new communications equipment has been ordered installed in the aircraft since the prototype flew, but Chase's weight-saving program has reduced the net increase to less than a ton.

At present, Chase is building all parts for the C-123B except the floors, but as Kaiser-Frazer begins its own, Chase's role will become one of a major subcontractor and handler of C-123B modifications, despite the fact that Chase holds the prime USAF contract and K-F is legally the subcontractor.

Thus, a company whose first aircraft, the XCG-14 wooden glider, made its first flight just over eight years ago is ready to challenge old-line aviation firms for a place in the commercial plane market. If Stroukoff and his colleagues succeed (and Eastern Air Lines President E. V. Rickenbacker is on record as saying that there is no plane on the horizon which will handle the air cargo job as well as the commercial C-123), they will have accomplished with the MS-19 and possibly some of its larger successors a feat that many other firms in the industry will envy. • • •



NEW HOME FOR CHASE will be on 54-acre site in New Jersey.

Pioneer and CAB Still At Odds

With interim bank financing assuring a continuation of services, Pioneer Air Lines is planning to discard its Martin 2-0-2 equipment and convert to DC-3 equipment. Officials of the airline indicated to CAB members recently that about three months would be required for the switch-back.

The airline replaced its DC-3 fleet last June with Martin 2-0-2's, but CAB, on March 13 of this year, refused to underwrite with mail pay the higher costs of operating the Martin aircraft.

Pioneer's president, Robert J. Smith, took issue with CAB "inferences" and "direct comments" that "left the impression that Pioneer purchased its Martins . . . in spite of warnings from the CAB and without permission or knowledge of that Board."

CAB had its say too. Commenting on Smith's blast, CAB Chairman Oswald Ryan told AMERICAN AVIATION that Pioneer, at an April 3, 1952, meeting with CAB "was not asking advice of the Board, but just telling us what they had done."

Extra Section

By William D. Perreault

WE'RE ALWAYS AMUSED by the structural monstrosities used in aircraft factories to run load tests on what look like "fragile" components. At Doman Helicopters recently we noticed that it took a jig made of welded five-or-six-inch-diameter iron pipe to simulate the engine mounts and carry the related loads using civil engineering standards. Another example comes in a note from Lockheed telling how the floor of the C-130A turboprop transport, machined from a single slab of duraluminum, will carry loads of 300 pounds per square foot, while the foot-thick floors of a skyscraper, made of concrete interlaced with a mat of ⅜" reinforcing steel every two inches, is rated for only 250 pounds per square foot.

•

Accidents are often the result of two completely unrelated failures, failures which we often regard as "highly unlikely" when we discuss accident potential and the precautions necessary to prevent them. An example of such a coincidence is evident in the recent case of an airline DC-3 on final approach to land at Utica, N. Y. A snow plow drove out onto the runway and the pilot applied power to go around. One engine became very rough immediately, but the pilot chose not to feather the engine and circled the field and landed without incident. Subsequent inspection of the engine showed it to be more than just rough—it had failed internally. God was his co-pilot.

•

In his paper "Airline Appraisal of Convertible Aircraft," ATA's **Grahame Aldrich** presents some conclusive comments on the problems of penetrating the short-haul market with any type aircraft. The following table from his paper emphasizes the relationship between direct flight costs and stage length:

Aircraft Model	Cost in Current Dollars (stage length in miles)			
	Less than 150	151-500	501-1500	Over 1500
Douglas DC-3	.0234	.0198	.0180	....
Convair 240	.0142	.0119	....	....
Martin 2-0-2	.0182	.0147	....	....
Douglas DC-4	.0216	.0176	.0157	.0151
Douglas DC-6	.0210	.0166	.0134	.0127
Lockheed L-649	.0234	.0183	.0150	.0141

•

And while we're handing out statistics we might well cite those on the safety of aircraft operations as contained in a bulletin titled, "The Novelty is Gone," published by Remmert-Werner, Inc., at Lambert Field, St. Louis, Mo. 1951-1952 insurance records on transportation fatalities per 100 million passenger-miles show:

Executive and corporation aircraft	.14
CAA certificated regular airlines	.39
Automotive vehicles	7.60
Grandfather's horse & buggy	30.00

Actuaries consider an airline pilot twice as good an insurance risk as a house painter.

•

You've probably never heard of A-Z Enterprises but it is an interesting company sponsored by the Aircraft Division of Vickers, Inc. A-Z Enterprises, as Vickers' Walt Flinn describes it, is a full-fledged organization financed by stockholders. It has all the management, production, product, and sales problems experienced by a million-dollar business. But it is only capitalized for $100. President Patrick Fraley is 18 years old, and Sales Manager Tim McMaster only 17. None of the 18 members of the firm is more than 19 years old. They market "Magic Mist," an eye glass cleaner which might prove useful around your shops. Also, they sell plastic holders for paper cups as used on some airliners. A-Z is just one of thousands of Junior Achievement companies around the county with a purpose of providing "young people with a preview of the business world."

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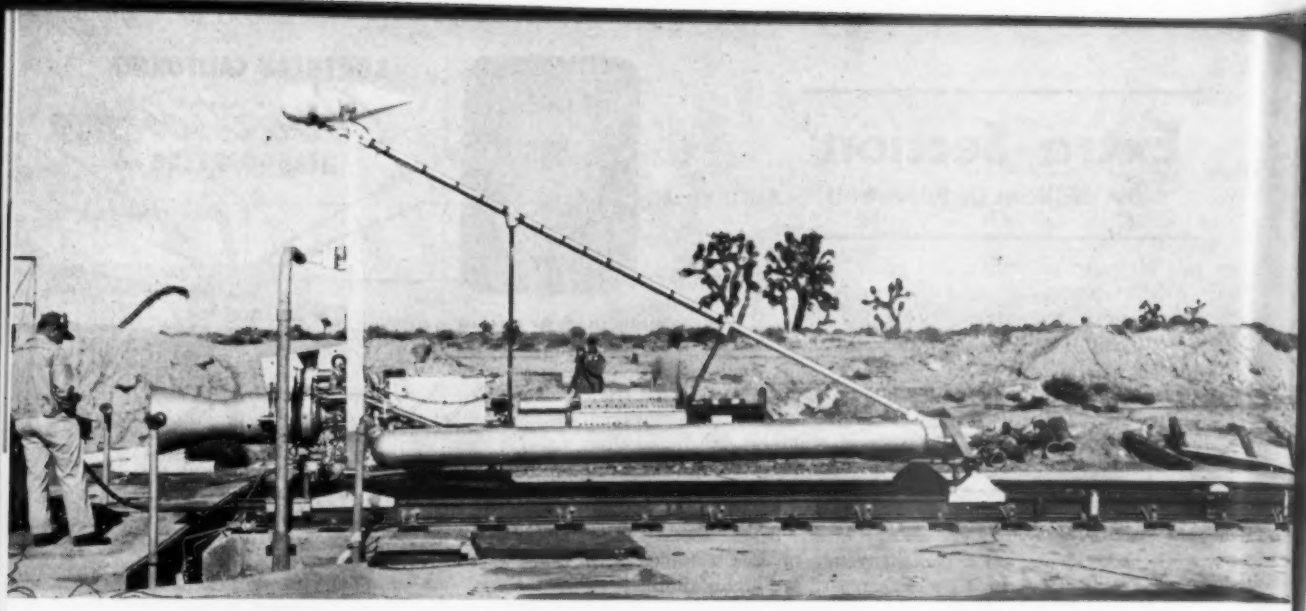
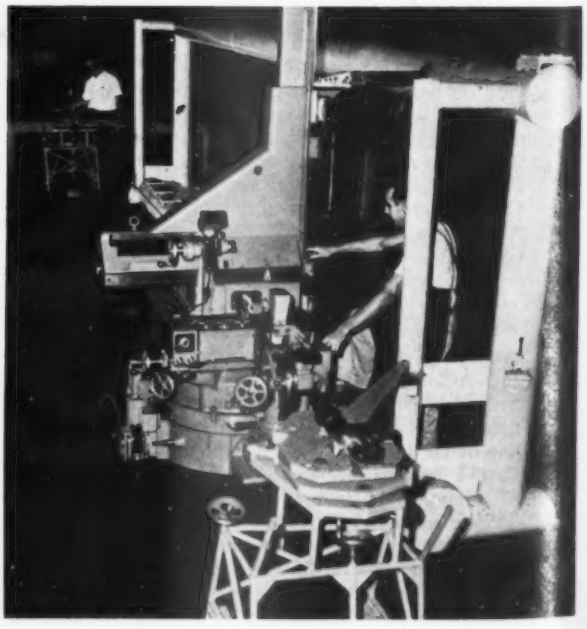
UAL Leads Industry in



Test sled, designed by North American Aviation for the Air Force, enables earth-bound rocket engine tests to be accomplished, going from a dead stop to 1500 miles an hour in 4.5 seconds.

New Devices Speed Production

Reduced manhours is result of Reed Engineering Co. cone roller, used by Ryan Aeronautical Co. to build inner exhaust cones for jet engines. Much of the tedious hand and press work has been eliminated. A sheet of pattern-cut stainless steel is placed between rolls, push-buttons are depressed, and finished cone rolls out.



Coordinate setting machine, used by Fairchild tooling department employes, permits manufacture of tools to close tolerances. Machine, to be used for manufacturing tools for McDonnell F3H Demon, is capable of setting points of fittings within a few thousandths of an inch in correct relationship within a maximum range of 100 feet.

UAL Leads Industry in Communications Change

United Air Lines is now testing a ground-to-air communications system between Chicago, Ill., and Cleveland, Ohio, which gives promise of bringing about a major change in all airline handling of ground-to-air communications. UAL has already decided to convert its entire system operation to conform to the test set-up, and as part of the changeover will relinquish the installation and maintenance of all of its VHF ground communications facilities to the American Telephone and Telegraph Company on a monthly rental basis.

The actual contract is being worked out between Aeronautical Radio, Inc., which holds a lease on all non-government ground-to-air communications stations. Although final agreement has not been reached, the arrangement is seen as a foregone conclusion from these details which have been learned:

• **Seventy-five VHF** transmitter-receiver units needed to modernize UAL's entire system have been purchased by Western Electric. The Wilcox Electric Co. has started to make deliveries.

• **The target date** for start of operation is close at hand. All equipment is slated for delivery by May 15, 1953.

To United the tie-in with AT&T offers many new potentials. The biggest is the provision for complete VHF coverage over its routes, with all stations automatically coupled to and interconnected by Bell System land-line telephone. Although more stations will be required, some reduction will be realized in the number of radio operators needed.

In the test installation operated by UAL, Chicago and Cleveland are provided with attended ground stations. Intermediate facilities installed at Toledo and Angola, Ohio, and South Bend, Ind., are unattended and are automatically coupled to leased telephone land lines.

Advantages of the ownership and maintenance facilities of AT&T are many. VHF coverage often requires operating facilities at many out-of-the-way locations, often mountain-top sites not accessible to airline crews for repair. AT&T, through its growing network of television micro-wave relay towers and locally available Bell System maintenance crews, is in a better position to set up the facilities and to maintain them more easily and cheaply. The entry of AT&T into the airline communication field presents another potential, although it is one not without problems — the possibility of air-to-ground telephone service for passengers.

West Coast Talk

By Fred S. Hunter

YOU CAN GET BETS in Los Angeles (not Santa Monica) that it will be 1960—at the earliest—before a jet transport shows up on a domestic carrier in this country. These 1960—or later—prognosticators simply can't see the percentage in a domestic carrier displaying any great haste to order another new airplane—with an operating bill of $700 an hour, moreover—just as it is beginning to get some good out of an eminently satisfactory "interim" plane like the Douglas DC-7 or the Lockheed Super Constellation.

The DC-7, for example, over a 2,000-mile range will show an average cruise speed of 358 mph. Pretty good, they say. Douglas estimates an operating cost of 95c per airplane-mile. Even allowing for typical factory optimism, that's good, too. In nonstop transcontinental operation, if an airline wants to get fancy, the DC-7 will carry 62 passengers westbound against prevailing headwinds from Idlewild to San Francisco. Eastbound it will be a breeze. Thus those who look to 1960—or beyond—contend the domestics can very well afford to wait for a better look at what they may get before they lay $50,000,000 or thereabout on the line for a starter set of jets. The international scene, they admit, has different aspects.

HYDRO-AIRE'S SHORT-RUNS FLOURISH

Hyrdo-Aire, Inc., is having no little success with the "short-run" shop it established six months ago. This unique enterprise is a little Hydro-Aire in itself. It has its own building, Plant 3, in Burbank, makes its own engineering changes, does its own tooling, orders its own outside production, buys its own raw materials when necessary, does practically everything except make out its own pay checks. It turns out quickie jobs, and specials. Prototypes, for example. Or advance units on an order that otherwise can await tooling and the establishment of a production line. Or custom jobs like tricky valves for experimental guided missiles.

It is strictly a production shop, however, and is separate and distinct from Hydro-Aire's model shop. Idea for the "short run" division as a separate unit originated with R. C. Stunkel, Hydro-Aire's vice president of production, who thought he might kill two birds with the same rock: provide a valuable customer service by having a crew of experts who could turn out special orders without formal tooling, and at the same time keep his main production sections at Plant 1 completely free for major production. It's worked out fine.

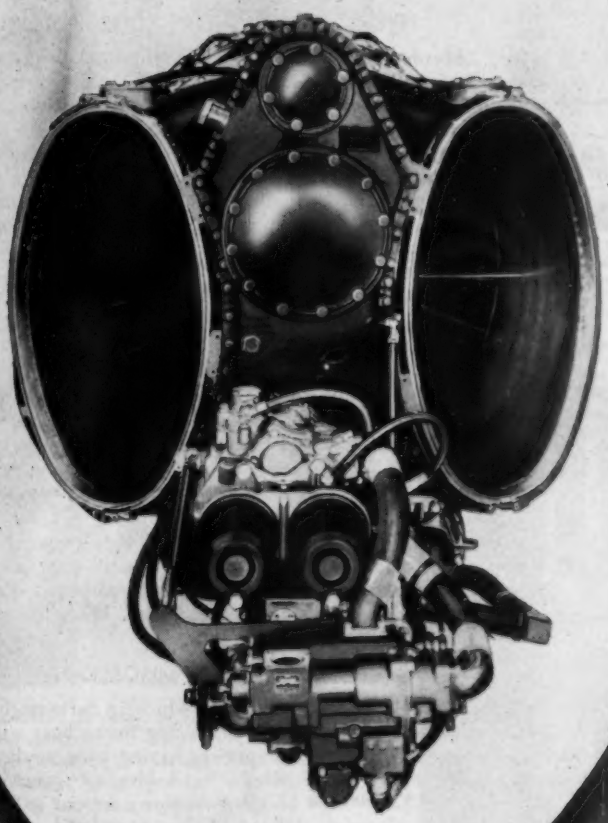
The "short-run" shop is now doing $75,000 to $100,000 a month with 31 production employes and it is apparent that in its first year of operation it will show a profit on its own, something which was entirely secondary in creating the department. Peter Harbauch, formerly Hydro-Aire's engineering liaison head, is supervisor of the new division.

WEST COAST MISCELLANY

If there should be an earthquake, which in turn might create atidal wave in Los Angeles Harbor, **Howard Hughes' big flying boat** will float right out into the bay, an automatic release arrangement having been worked out on orders from Hughes for just such a contingency . . . A Hughes spokesman, incidentally, says Hughes now has $22,000,000 of his own coin invested in the boat. . . . Getting ready for turbine altitudes, AiResearch has completed tests of a **cabin pressure regulator in the turboprop Viscount** in Canada. . . . Of Douglas' backlog of more than two billion, nearly **one billion is in the El Segundo division** where it is all Navy. . . . Lockheed's P2V-7, which will come out this fall, will have **a bombardier in the nose** . . . North American is still turning out **spares for the F-51,** but it no longer makes 'em for the twin Mustang, the F-82 . . . **Marquardt and Northrop** are the only aviation concerns in the Southern California area still having RFC loans, and Northrop is fast reducing its obligation.

HIGHLIGHTS IN *Jet Engineering*

New jet engine designs further reduce frontal area

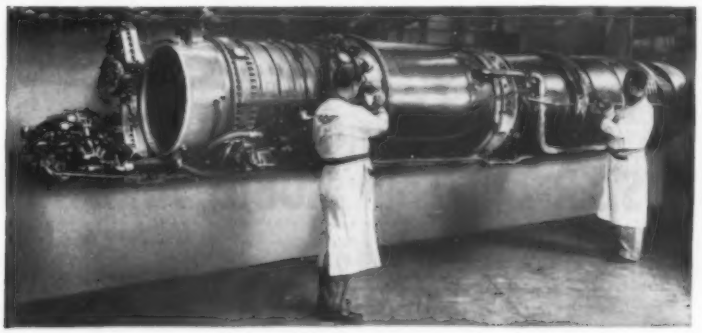


With their introduction of the first axial flow jet engine over ten years ago, Westinghouse engineers expanded their efforts to reduce aerodynamic drag to an absolute minimum. Continued designing and testing met with outstanding success on the J34 engine, first in its class with the smallest frontal area per pound of thrust . . . permitting the first twin-jet aircraft design. The unequaled performance of twin-jet planes in Korea has put real meaning in that record.

While the J34 was writing jet history in combat, Westinghouse had new pencil-slim engines in their test cells . . . new designs for a more powerful jet engine that promised even greater latitude in plane design. Today, those designs have made possible the J40 with the smallest thrust frontal area ratio of any announced engine.

Realizing that even projecting rivet heads can have effect on the speed of jet aircraft, Westinghouse engineers know that they must respect every aerodynamic factor. That is why they have maintained leadership in the development of axial flow engines . . . why they have designed jet engines smaller in diameter for given power output than any other manufacturer. That is why they have acquired a wealth of jet engineering and designing knowledge that will prove invaluable to commercial airlines tomorrow. Westinghouse Electric Corporation, Aviation Gas Turbine Division, Philadelphia 13, Pennsylvania.

J-54014



Final Assembly. Shown above in the last stages of assembly is the Westinghouse J40 . . . world's most powerful jet engine fully qualified for production.

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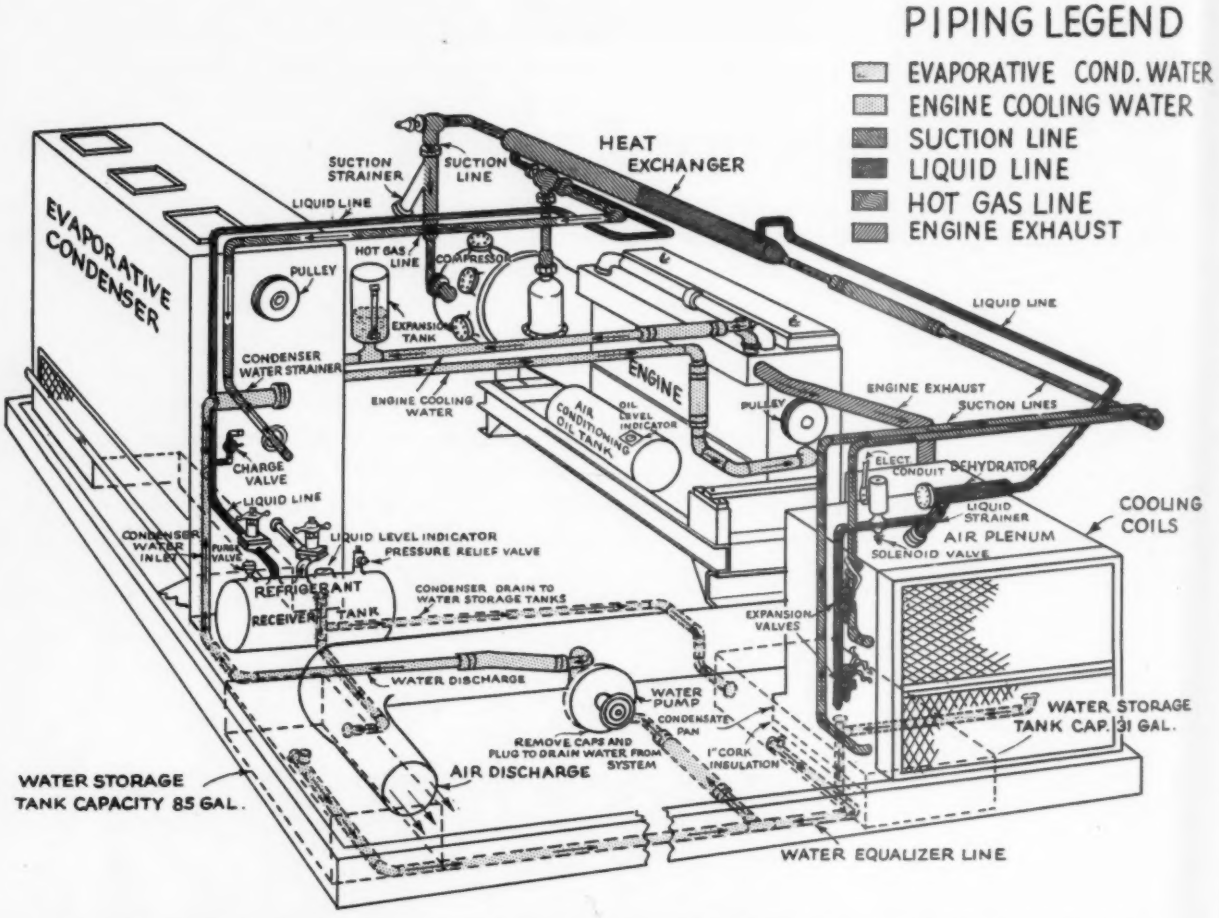


CHRYSLER-AIRTEMP MOBILE AIRCRAFT AIR CONDITIONER

United Air Lines, looking forward to its fourth summer of operation with the Chrysler Airtemp ground air conditioner, has come up with some cost figures on its use. The most interesting show that the Airtemp cools an airplane at 1/16 the cost of the wet ice method formerly used by UAL.

When United went out to buy new air conditioners, it was evident that the investment was to be no small one. The Douglas DC-6 airplane had been in UAL service over three years and the forty Paeco wet ice conditioners it used for the DC-3, although marginal for DC-4 cooling, fell far short of its needs for the DC-6. A fleet of 26 units would fill the airline's major station requirements, at a cost exceeding the $350,000 mark.

United was not gambling with the Chrysler unit. The first order called for one unit; six months later it purchased four more; orders for five, then seven and nine followed. The selection is proving to be a good one, according to UAL's S. V. Hall, general manager of ground services. No major difficulty has been experienced with its operation Hall reports, and the only real modification has been the installation of heaters—United bought the original units less the heaters.

As is the case very often in airline equipment selection, others soon followed UAL's lead. Capital Airlines took delivery of six, Chicago & Southern four, and Philippine Air Lines one. Major reasons for the unit's success, according to R. E. Shatrock, chief aviation sales engineer of the Airtemp Construction Company, the Chrysler subsidiary which manufactures the conditioner, centers around these features:

• **Design emphasis** on the problems of operating personnel, ease of maintenance, and spare parts availability.

• **Use of oversize components** throughout allows low speed compressor operation, assures reserve capacity, and minimizes maintenance.

These features show up in the following design details which "sell the unit" to airline engineers and maintenance people, Shatrock says:

Ease of operation—There is no clutch to engage and disengage. Conversion from summer cooling to winter heating takes less than a minute, an asset during the changeable periods.

Design for maintenance—Access doors permit observation while in use; in the evaporative condenser for sprays, the heat exchanger surface and the sump strainer; in the direct expansion coil plenum for the heat exchanger surface and drain openings.

For Safety—A shut-off and alarm circuit in the gasoline heating system prevents fuel drainage from the heater to the ground in event of flame-out or ignition failure.

Service and spare parts—Since its air conditioner sales extend beyond aviation, Chrysler provides factory engineers in major cities and over 800 representatives throughout the U.S. Standard parts used assure availability of spares.

The 37 units sold to the airlines to date are only the beginning, as Chrysler sees it, with others already showing strong interest. Selling slightly higher than competitive units, the company narrowed the gap recently with a five per cent price cut to $14,100.

Ceramic Exhaust Stacks

Ceramic coated exhaust stacks are being service tested on American Airlines' Douglas DC-6 and DC-6B airplanes. Four engines have been selected for the test, with two installed on a DC-6 using the AA certificated R-2800-83AM3 engine and two on a DC-6B using the P&W CB-16 engine.

United Air Lines Air Conditioners-Before and After

Ratings	Paeco	Chrysler Airtemp
Refrigeration capacity (tons)	3-6	20*
Heater capacity	200,000 BTU	Same
Air delivery**	900 c. f. m.	1200 c. f. m.

*Existing units can be modified to deliver 28 tons.
**Paeco based on delivery against 8" water gage static pressure, Chrysler against 12" static pressure.

Costs—From UAL Denver station for July 1952		
Cost of ice used	$373.26	none
Cost of gasoline	58.25	$81.75
Total of ice and gas	$431.51	$81.75
Number of airplanes cooled	217	738
Operating cost/aircraft cooled	$1.98	$.12

AIRTEMP UNIT in action, servicing a United flight.

Daily Utilization

INTERNATIONAL CARRIERS

Average Revenue Hours of Use Per Day Per Aircraft

	Nov.	Dec.
American	4:50	4:59
Braniff	8:24	8:09
C & S	9:31	9:33
Colonial	8:17	9:26
Eastern	9:38	9:34
National	8:39	8:23
Northwest	7:08	7:38
Panagra	4:17	4:23
Pan American		
Latin American	4:17	5:01
Atlantic	5:31	5:14
Pacific	6:46	7:12
Alaska	7:22	7:44
TWA	6:39	6:26
United	5:08	5:22

LOCAL SERVICE CARRIERS

Allegheny*	4:57	5:00
Braniff**	6:15	5:53
Bonanza	7:38	7:39
Central	7:00	6:00
Frontier	7:20	7:12
Lake Central	5:01	4:24
Mohawk	5:23	4:51
North Central	6:00	6:14
Ozark	7:11	6:33
Piedmont	8:02	7:43
Pioneer	6:35	6:21
Southern	6:34	6:30
Southwest	6:13	5:32
Texas-Texas	5:34	5:33
West Coast	5:40	6:19
Wiggins	1:36	1:53

*Formerly All American Airways. Change in name was effective February 10, 1953.
**Figures cover equipment used in operation of local service under 106.

A Message to Engineers from Walter Tydon*

"A secure future, exceptional opportunities for advancement, and a high starting salary await you at FAIRCHILD. If you are one of the men we are looking for. We have openings right now for qualified engineers and designers in all phases of aircraft manufacturing; we need top-notch men to help us in our long-range military program: turning out the famous C-119 for the U. S. Air Forces.

"FAIRCHILD provides paid vacations and liberal health and life insurance coverage. We work a 5-day, 40-hour week.

"If you feel you are one of the men we are looking for, write me. Your inquiry will be held in strictest confidence, of course."

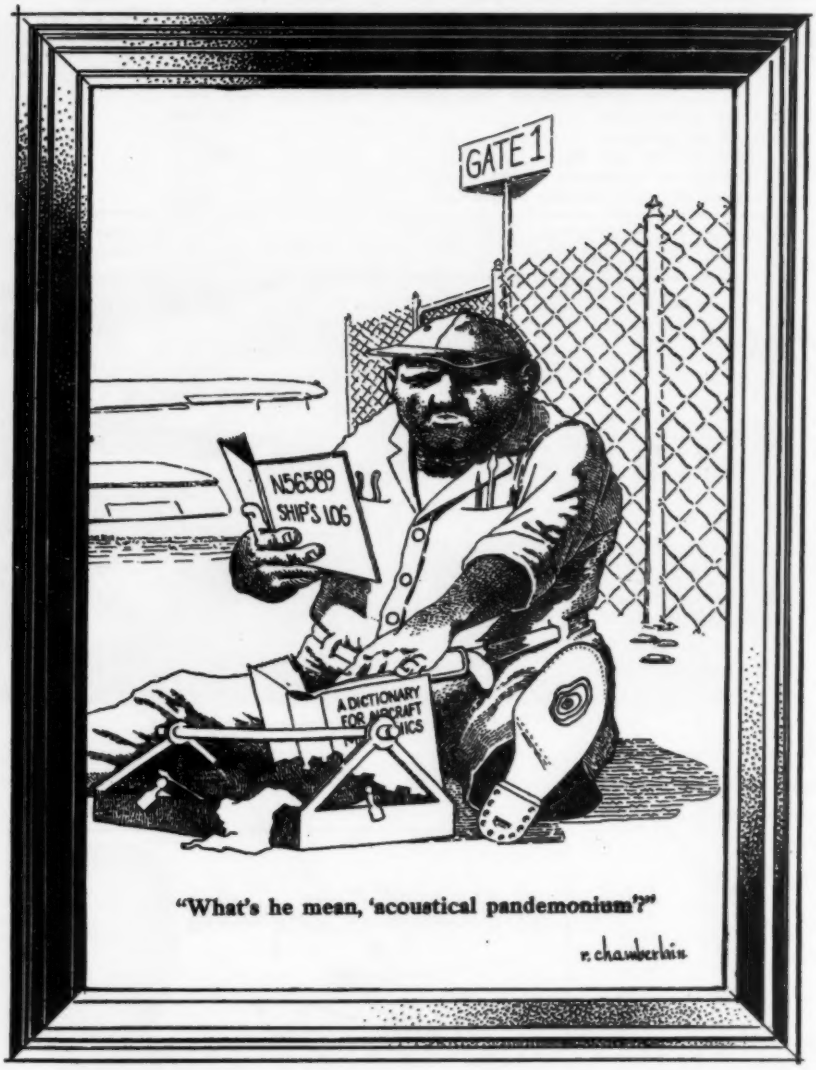
Walter Tydon

*Walter Tydon, widely known aviation engineer and aircraft designer and veteran of 25 years in aviation, is Chief Engineer of Fairchild's Aircraft Division.

ENGINE AND AIRPLANE CORPORATION
FAIRCHILD Aircraft Division
HAGERSTOWN, MARYLAND

Ready for Hanging

One of a series of selected portraits of some very select members of the airline family, as seen by Richard E. Chamberlain.



Pilot Error Cause of FTL C-46 Accident

Pilot judgment and technique while attempting recovery from a simulated single-engine operation was the probable cause of a Flying Tiger Line C-46 accident at Grand Island, Neb., on August 21, 1952, according to the Civil Aeronautics Board investigation report.

Explaining its conclusions, the Board said that during the engine-out condition the pilot actually feathered one propeller, whereas the accepted and safer procedure is to reduce power to the near zero thrust position, so that should power be needed, it is immediately available. While on single engine the airspeed dropped from 140 mph to about 85 mph and after unsuccessful attempts to restore the dead engine a wheels-up landing was made.

CAB Boosts C-46 Take-off Weight

Civil Aeronautics Board has authorized increase in the maximum gross take-off weight for C-46 aircraft from 45,000 pounds to 45,300 pounds effective April 1, 1953, on those aircraft equipped with Hamilton Standard "clipped" type propeller blades. In a special regulation authorizing the increase until January 1, 1954, CAB also ordered a reduction in gross weight from 45,000 pounds to 44,300 pounds for aircraft not having these propeller blades, identified as Hamilton Standard model 6491A-9.

New regulation terminates on January 1, 1954, at which time the C-46 is required to comply with the Transport Category provisions of Civil Air Regulations.

Radar Chart Correction

In the chart showing "How Intervening Rain Cuts Radar Range" (American Aviation, March 30, page 25) the symbols were reversed by error so that airline specification weather radar was shown as inferior to that of current military all-purpose radar. The opposite was intended, as was indicated in the accompanying report on Dr. Marshall's study.

Continental to Build French Air Generator

The U. S. Air Force has awarded a $5,400,000 contract to the Continental Aviation & Engineering Corp. for production of Turbomeca Palouste turbine engine air generators to be used for pneumatic jet engine starting equipment. Production is scheduled to begin this year.

The Palouste is manufactured by Continental under a licensing arrangement with the Societe Turbomeca of France. It has a maximum air output of 139 pounds per minute at 41.2 psi and 15° C. with a fuel consumption of 275 pounds per hour. The unit weighs 187.5 pounds.

Microphone technique is subject of special classes being held for Western Air Lines' stewardesses, conducted by Ralph Story of the Columbia Broadcasting System, shown above briefing Nora Jeroue, supervisor of stewardess training.

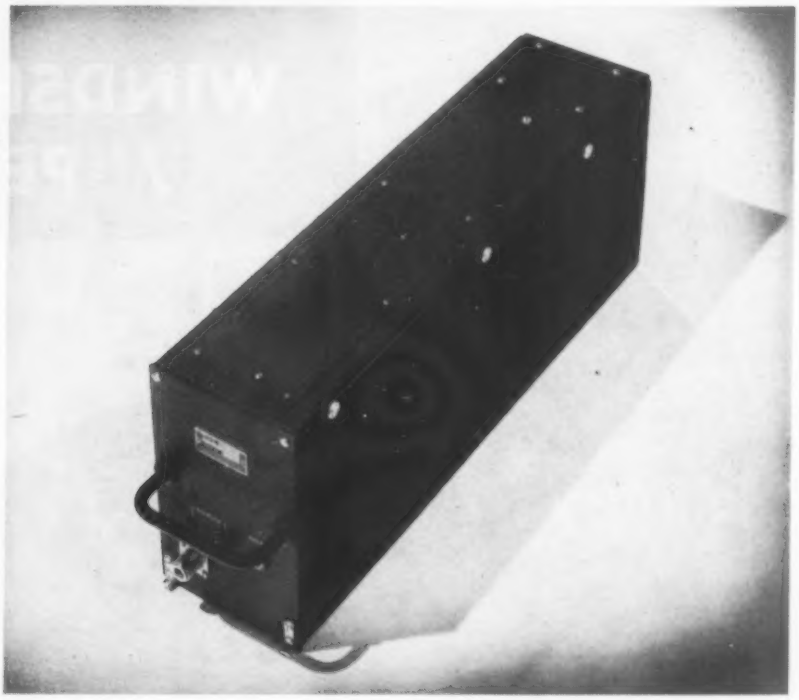
New Products

Recording Camera

An automatic recording camera, designed for aircraft instrument recording, has a wide range of uses in scientific, engineering, and industrial applications, according to its producer, J. A. Maurer, Inc. Originally designed by D. Shackman & Sons, Ltd., London, England, the new camera features light weight and compact design, weighing under six pounds and measuring 8⅞" x 3⅜" x 4".

Operation of the camera is fully automatic, providing speeds up to four frames per second and a film capacity of 21 feet. Other features include a spring motor power source with the cycle initiated by electrical pulses of either 12 or 24 volt d-c supply, and a range of five shutter speeds ranging from 1/10 to 1/200 second. Choice of models provides either 200 1" x 1" frames or 300 ¾" x 1" frames.

Address: **J. A. Maurer, Inc.,** Photographic Instrumentation Division, 37-01 31st Street, Long Island City 1, N. Y.



New Bendix Receiver Developed

Bendix Radio Communications Division of Bendix Aviation Corporation has announced the development and production of a new VHF aircraft communications receiver which weighs eighteen pounds, provides 360 crystal-controlled channels, and is designed as a companion to the Bendix TA-18BB transmitter to provide a complete VHF communications system for commercial transport and executive aircraft.

The new receiver is designated the Model RA-18B and has been type certificated for scheduled airline use. It operates in the frequency range from 118.0 to 135.9 megacycles and features a simple "finger-tip" control panel in the cockpit of the airplane for frequency selection. Panel illumination is provided by the Bendix "Da-Nite" system of white-lighted numerals for day operation and red-lighted numerals at night.

Dimensionally the RA-18B conforms to JAN-AL-D (½ ATR) specifications and its design calls for 16 rugged tubes and one voltage-regulator tube. Other performance specifications include: sensitivity of better than 2.5 microvolts on all channels; spurious and image rejection at least 75 decibels down; squelch adjustable to open from receiver noise threshold up to 25 microvolts; automatic gain control output is held within three decibels down from five to 100,000 microvolts; and audio output is more than 200 miliwatts.

The receiver operates from either 27.5 volts d-c or 115 volts a-c primary power source and the power supply, which weighs five pounds, can be mounted as an integral part of the receiver.

Address: **Bendix Radio Communications,** Division of Bendix Aviation Corporation, Baltimore 4, Md.

Connectors

Hermetically sealed connectors, series M-7500, have been introduced by the Monowatt Department of General Electric Company for circuit protection in similarly sealed electronic and electrical instruments. Ratings of the new connectors, according to the manufacturer, include ability to withstand mechanical shock of 100 g's, thermal shock from 500°F. in oil to the temperature of liquid air, temperature as high as 1,500°F., and a voltage breakdown of over 1,000 volts.

Physical make-up of the connectors provides one end for mating with the standard AN (MIL) types and the other with a tapered and serrated surface permitting it to be pressed into an instrument housing and mechanically anchored to prevent turning.

Address: **Monowatt Department, General Electric Company,** 95 Hathaway Street, Providence 7, R. I.

Marquette

WINDSHIELD WIPERS

provide a safety factor on the

SUPER CONSTELLATION

The Marquette METAL PRODUCTS CO.

CLEVELAND 10, OHIO

SUBSIDIARY OF CURTISS-WRIGHT CORPORATION

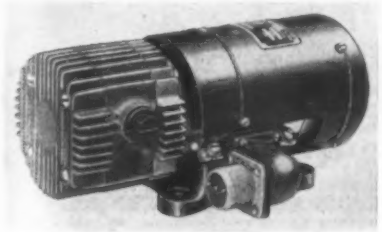
Also Manufacturers of

ROLLER BEARING TEXTILE SPINDLES
HYDRAULIC GOVERNORS
FUEL OIL PUMPS AND INJECTORS
PRECISION PARTS AND ASSEMBLIES

Welding Helmet

A lightweight welding helmet of fiber glass construction which will not split, crack, or deform will cut helmet costs in half, according to its manufacturer, the United States Safety Service Company. Called Saf-I-Weld, the new helmet also features a position hinge which locks the helmet in the "raised" or "working" positions and is adjustable to fit any head size.

Address: **United States Safety Service Company,** 1215 McGee Street, Kansas City, Mo.



Air Compressor

An air compressor for pressurizing radar installations at altitudes up to 50,000 feet has been announced by Lear, Inc., Romec division. Weighing 8.8 pounds and called the series RG-9065, the new compressor is driven by a ¼ hp 4300 rpm continuous duty motor using a 27 volt d-c, 12 ampere power supply.

Rated capacity of the compressor is 0.[illegible] pounds per minute or 565 cubic inches per minute at 68°F., nine inches Hg absolute inlet pressure, and 34 inches Hg absolute outlet pressure.

Other features include check valve provision in the pump outlet port permitting intermittent operation without loss of system pressure when the compressor is stopped and a silica gel dehydrator which is supplied as extra equipment for removing water vapor at the inlet port.

Address: **Lear, Inc.,** Romec Division, Elyria, Ohio.

Technical Literature

ELECTRIC HEATERS: General Electric, Schenectady, N. Y., has just issued the 1953 edition of its catalog on Calrod heaters and heating devices. The 60-page two-color information and buying guide includes application, features, installation and costs of the equipment.

•

DRILL CHUCK: Continental Tool Works, division of Ex-Cell-O Corporation, 1200 Oakman Blvd., Detroit 32, Mich., has designed a new stub drill chuck for use in multiple-spindle heads; details in Bulletin 60224.

•

BRIDGE AND AMPLIFIERS: Catalog sheets describe the new Model 250-C1 Universal Impedance bridge and accessory amplifiers manufactured by Brown Electro-Measurement Corp., 4635 S. E. Hawthorne Blvd., Portland 15, Ore.

•

INDUSTRIAL CLEANER: Bulletin 126 describes Spray White, new product of Kelite Products, Inc., 1250 North Main St., Los Angeles 12, Calif., which is said to remove grease, oil, wax, dirt, etc. from all metals, plastics, rubber, wood, and other materials just by spraying on and wiping off.

•

PLASTIC PACKAGING: New four-page bulletin gives details and applications of polyethylene bags and liners produced by the Plastic Packaging Company, 730 North Franklin Street, Chicago 10, Ill.

•

SAMPLING SWITCHES: A representative cross section of high-speed, multi-channel rotary sampling switches are presented in a four-page brochure published by Applied Science Corporation, P. O. Box 44, Princeton, N. J.

•

DRILL JIG BUSHINGS: The American Drill Bushing Company, 5107 Pacific Boulevard, Los Angeles 58, Calif., has a new catalog available outlining its full stock of drill jig bushings.

•

INDUSTRIAL PRESSES: New 20-page catalog details and illustrates open-back, inclinable presses designed by the Federal Press Company, Elkhart, Ind.

•

TEMPERATURE CONTROL UNIT: Pneumatic temperature control unit model No. 107614 adaptable to all aircraft systems is described in four-page bulletin designated 2-6-1 and is available from AiResearch Manufacturing Company, Los Angeles, Calif.

•

WELDING: Dot Weld process, low temperature welding process for reclaiming castings, is outlined in a new eight-page booklet put out by the Metallizing Company of America, 3520 West Carroll Avenue, Chicago 24, Ill.

•

AIRCRAFT RELAY: Descriptive literature is available on a subminiature aircraft type relay meeting requirements of Military Specification MIL-R-5757 from Filtors, Inc., 30 Sagamore Hill Drive, Port Washington, N. Y.

Airline Commentary

By Eric Bramley

WE HAVE TWO interesting items to report as a result of the story in AMERICAN AVIATION of March 2 by **Wayne W. Parrish** on the magazine's survey of loudspeaker announcements at Washington National Airport. The story, you may remember, pointed out that the terminal was a babel of noise and that something must be done to cut the number of announcements.

The first item concerns Los Angeles International Airport's announcement system. It comes from a report by **Fred Hunter,** our west coast editor, who dug up some interesting facts. The LA system, which was installed and is maintained by RCA, is strictly an airline cooperative, with the carriers setting up all the rules, he tells us.

All costs are pro-rated among the airlines according to the number of calls each makes in a month. Cost averages about eight cents a call. "There is almost no paging of people, except passengers," Fred says. "There is no paging of porters or airport employes. A permanent card file contains a card carrying the precise wording for every allowable announcement. If it isn't on a card, the girls won't make the page without an okay.

"A carrier is allowed up to six tradenames of flights per day, such as TWA's Sky Chief, American's Mercury, etc., but Ambassador, Flagship, and Mainliner are barred. So are DC-6, Constellation, and Stratocruiser. Convair-Liner and Martin-Liner are permitted.

"On their own, the airlines also voted to put a ban on strung-out departure or arrival announcements. Only two cities can be identified in an announcement. An alternative is to name one city and use the phrase 'intermediate cities.' But the latter phrase must take the place of a name."

Woodruff De Silva, airport manager, who has made a study of PA systems, believes the only way to have an efficient and unannoying system is to have the airlines operate and police it. He believes LA's is as good as any in the country. Sounds good to us.

•

Second item concerns the study of announcements made by Lockheed Air Terminal as a result of the story. A stenographic record was made one evening between 8:05 p.m. and 10 p.m., which is the busiest period because it includes non-sked departures. Lockheed, incidentally, controls its loudspeaker; airlines can't make their own announcements.

Our quick analysis of the record shows: exactly 100 announcements were made in one hour 55 minutes (81 were made in Washington in 50 minutes). Of these (figures include "repeat" announcements) non-sked arrivals or departures accounted for 10; scheduled arrivals or departures, including intrastate California Central, 15; non-skeds paging people to come to their counters, 30; skeds doing the same, six; requests for people to come to the telephone, 17.

This adds up to 78. Others were announcements that limos were leaving, that somebody had better get to Gate 10 because their flight was leaving, etc. Looks like there were a lot of phone calls and pages. L. W. Wulfekuhler, terminal manager, explains that he's fairly lenient on phone calls because you never can tell when a call may be important.

•

A few issues ago we commented that maybe the airlines should get together and standardize the name of low-fare service—either "coach," "tourist," "second-class," or something else. Here's one opinion, from **Bob Johnson,** vice president and assistant to the president of United Air Lines: "You were certainly correct in your plea. . . . The other Sunday there was an article in one of the newspapers on tourist service to Hawaii, and the word 'coach' was used 11 times and the word 'tourist' six times.

"We have had a survey made of identification with the traveling public, and through this research we found that 'tourist' was the more effective term. Consequently, United is standardizing on 'tourist' and forming with the majority."

Books

HUMAN FACTORS IN AIR TRANSPORTATION, *by Ross A. McFarland. McGraw-Hill Book Company, Inc., 330 West 42 St., New York 36, N. Y. 830 pages. Price: $13.00.*

The daring young men who wrestled Ford tri-motors into the air when the industry was struggling through its own youth have a touch of gray at the temples now, and although it adds an air of distinction as they climb aboard their Connies and DC-6's it symbolizes a headache of considerable proportions.

What does a pilot do when he loses his job at, say, 50, because of his age, a time when most men are at their peak earning level? What does an industry do when its most experienced men, into whose training thousands of dollars have been poured, are taken from it? And just when *is* a pilot "too old"?

In a chapter titled "Aging and Efficiency in Airmen" Ross McFarland explores the problem of pilot aging and concludes: "Changes with age do not necessarily mean a decline in capabilities. Compensation takes place for every deviation, and if certain capacities diminish, others are enhanced. For example, if speed of reaction is lowered with age, there occurs a compensatory increase in skill, judgment, and endurance."

Plane Commander

To take advantage of the accumulated experience that comes with age, McFarland suggests that the largest airliners, particularly those on international routes, include a "plane commander" as one of the crew. This senior officer would make such command decisions as whether or not to attempt a schedule or a landing, but would leave all flying to a younger pilot. The plane commander would also handle the paper work of bills of lading, etc., and would deal with customs and other government officials. He would be responsible for the flight, rather than the flying.

The detail with which McFarland examines the problem of aging in this chapter (there are 27 tables and graphs and two pages of bibliography) is characteristic of his approach to the wide range of subjects covered in the book. Since it is hard to imagine an operation in which the physical and psychological condition of airline employes does not play a part, Author McFarland has a field as wide as the industry.

Among the subjects covered are the psychological and physical aspects involved in the selection of airmen; indoctrination and training of flight and ground crews; maintenance of their health and, consequently, their efficiency; safety on the ground and in flight; and sanitation control in this country and abroad.

Since McFarland's handling of his mammoth project is as clear as it is comprehensive, the book should find a wide audience among those airline people who are interested in that vital and too often neglected part of their operations: the human factor.

. . . W. K.

Northrop's Prime Equation

Northrop Aircraft production specialists initiate and install time-saving, cost-saving methods. The "half-shell" assembly technique, illustrated above, permits free installation of equipment in Scorpion F-89 interceptors now in production. Equations are used to solve problems. At Northrop Aircraft, the prime equation combines teams of administrators, outstanding scientists, and production specialists with modern industrial and research facilities. The combination efficiently converts imagination and knowledge into actual matériel of advanced design and incalculable value.

NORTHROP AIRCRAFT, INC.
HAWTHORNE, CALIFORNIA
Pioneer Builders of Night and All Weather Fighters
5A13

New Service Tracks Lost Passenger Baggage

Ruffled feelings are smoothed as fast-moving system saves passengers worry and clerks time.

By Richard F. McGrath

AIRLINE BAGGAGE handling efficiency may be improving or may be deteriorating. Whichever it is, neither the passenger who has just lost his bag nor the agent whose job it is to find it is particularly impressed with statistics on mishandlings-per-thousand. The primary concern, a three-step process that isn't as simple as it seems, amounts to

- **Finding the bag;**
- **Locating the passenger;**
- **Getting them somehow together again.**

Many airlines, refusing to believe that mishandling ratios will never reach absolute zero, become 100% preoccupied with 99% effective measures designed to prevent mishandlings rather than cure them. When inevitably a bag is mishandled, they find that they have no predetermined tracing-expediting procedure for finding the bag and returning it quickly and in good condition to its owner.

A flurry of teletype tracers is sent, but necessary follow-through frequently collapses as soon as the next shift of passenger agents comes on duty. The many successive steps entailed in a complete adjustment, often involving several airlines, are simply left to the initiative of those few who happen to be aware of the mishandling.

Such casualness is fortunately not evident among several airlines, which have been quite successful in working out predetermined search procedures. But even these companies can go only so far; remaining are the continuing problems of identifying individual pieces of missing luggage; keeping track of constantly moving passengers; and the central and permanent registry of baggage descriptions and owner addresses—a place where both loser and finder can get fast, reliable information.

Recognizing this need for effective post-mishandling service, Delta Air Lines' Passenger Relations Supervisor Don Huff has set up an enterprise called International Tracing Service which, in addition to insuring baggage against permanent loss, employs quick, semi-automatic, and continuously available facilities for retrieving any of its registered bags which are temporarily lost.

Noteworthy is its policy of co-operation rather than competition with airline efforts. "We're not 'saviours of the industry,'" says Huff, "we just provide an assistance to both passenger and airline that neither can find alone."

Unique yet simple, the service doesn't depend on elaborate or complicated procedure. Registry with International Tracing Service, which is priced on a subscription basis at $5.00 for one year or $10.00 for three years, includes:

- **A certificate of insurance,** issued by the Louisville Fire and Marine Company, Inc., which protects the subscriber against any actual loss, up to $250.00, incurred while the bag is in the custody of any scheduled air carrier;
- **Detailed description** of the bag or piece of luggage and issuance of a registry number for quick reference by the I. T. S. office in the event of loss;
- **A durable, cherry-red plastic tag,** which is attached securely to the bag. The registry number is stamped on the tag.

Finder Wires Collect

One side of the tag bears the notation, "If unclaimed in 12 hours, wire collect International Tracing Service, Municipal Airport, Atlanta, Ga." The other side, itself a form of protection since it discourages those who might be tempted, offers a $100 reward for the arrest and conviction of persons guilty of pilfering or stealing the luggage.

Huff insists that for this reason relatively few I.T.S.-registered bags go astray at all. But any time one of them does become separated from its owner, the I.T.S. office is virtually certain to receive prompt notification of the mishandling—either from the passenger himself, who lists routing information as well as temporary addresses where he can be reached during his trip, or from the party locating the bag (airline or hotel baggage room, etc.).

Frequently, both sources wire simultaneously; the rest, of course, is then routine, since I.T.S. "stays on top of the deal" until the passenger actually regains possession of his bag.

Equally adept at passenger-finding and baggage tracing, I.T.S. gets to work the moment it is known from either source that a mishandling has occurred. If the first word is received from the passenger, finding and expediting the bag are facilitated by routing information and the passenger's current contact; if the initial information is merely a report of an unclaimed I.T.S. bag, the tracing office locates the owner, usually by consulting his already-registered residence or business address.

Tracing is nerve-centered by Huff himself who has accumulated 16 years of experience with the hundreds of peculiar things that can happen to mischecked airline bags and irate airline passengers.

Although International Tracing Service presently protects checked baggage only on scheduled air carriers (pending further actuarial study of rail-bus loss ratios), there seems to be enough to keep the service busy. Resident agencies have been established in Miami, Fla., Washington, D. C., Jacksonville, Fla., Augusta, Ga., and Columbia, S. C., and I.T.S. registrants include such multiple business accounts as regional offices of the Tumpane Company, and regional officials of the Southern Bell Telephone Company, Sears, Roebuck and Co., Citizens & Southern Banks, and others.

Huff believes I.T.S. can be helpful not only to passengers but also to airline Lost and Found departments, for which unclaimed baggage remains a chronic and expensive headache. Some of the research which led to the establishment of the tracing-insurance service indicates that only 10% of unclaimed bags contain any identifying papers; of these, only two in five list the owners' correct permanent addresses.

"Besides," reasons Huff, "when a bag is lost, it's almost certain that the owner isn't at home—else it wouldn't be lost."

Pass-riding airline employes (who, unlike revenue passengers, are protected against loss of luggage only by varying company policies and individual consideration of each mishandling on its own merits) can, of course, enjoy the full tracing and insurance protection offered by I.T.S.

Best measure of the potentialities and effectiveness of International Tracing Service is the reaction of airline passenger relations people. Here are a few of their comments:

- **Airline A:** "Your efforts have our hearty blessing. . . . Hope you will publicize your activity."
- **Airline B:** "It is our opinion that this is a step in the right direction toward the identifying of unclaimed luggage . . . which remains in the hands of airlines for some time."
- **Airline C:** "Believe the service offered by your company is exceptionally good."

Perhaps the most enthusiastic airline supporter of them all is the head of one company's Lost & Found department, whose bag was recently noticed unclaimed behind the ticket counter at a major eastern terminal. Fortunately, it had an I.T.S. tag on it.

1952 Airline Salaries

Following are 1952 airline salaries as reported to CAB:

Trunk Carriers

Braniff Airways, Inc.

T. E. Braniff, pres., $30,000 salary, $3,369 bonus and indirect compensation; **C. E. Beard,** exec. v.p., $28,125 salary (up $1,125). $2,275 bonus and indir.; **R. C. Shrader,** v.p., $11,875 salary (down $7,125.08), $1,457 bonus and indir.; **J. W. Miller,** v.p., $10,762 salary, $588 bonus and indir.; **C. G. Adams,** secy.-treas., $19,750 salary (up $749.92), $1,784 bonus and indir.; **O. W. Crane,** asst. treas., $9,900 salary (up $450), $735 bonus and indir.; **R. L. Barrier,** asst. secy., $8,200 salary (up $315), $505 bonus and indir.; **H. C. Thurman,** dir. (Deceased), $6,875 salary (down $8,125).

National Airlines, Inc.

G. T. Baker, pres. and dir., $30,000 salary, $43,504.51 bonus and indirect ompensation (down $7,896.47); **John L. Morris.** v.p., $12,000 salary, $17,401.80 bonus and indir. (down $3,158.60); **Walter Sternberg,** v.p. sales, $20,000 salary, $29,003.01 bonus and indir. (down $1,631.12); **E. J. Kershaw,** v.p. oper., $16,000 salary, $23,202.39 bonus and indir. (down $4,211.45); **J. M. Rosenthal,** v.p. industrial relations, $12,000 salary, $17,-401.80 bonus and indir. (down $3,158.60); **R. E. Wieland,** reg. v.p., $10,875 salary (up $1,875), $13,595.16 bonus and indir. (down $1,825.14); **J. C. Branwer,** treas. and dir., $12,000 salary, $17,401.80 bonus and indir. (down $3,158.60); **R. P. Foreman,** secy. and dir., $12,000 salary, $17,-401.80 bonus and indir. (down $3,158.60); **W. F. Johnston,** comp. and asst. secy.-treas., $9,050 salary (up $650), $12,181.25 bonus and indir. (up $627.79); **C. F. Sharp,** asst. v.p. sales, $8,800 salary, $2,040.77 bonus and indir.; **C. H. Calhoun,** v.p. eng. and maint., $10,374.92 salary, $705.45 bonus and indir.; **J. D. Crane,** v.p. (deceased), $1,000 salary (down $11,000), $10,151.06 bonus and indir. (down $10,409.34).

All-Cargo Carriers

The Flying Tiger Line, Inc.

Robert W. Prescott, pres. and dir., $30,000 salary, $8,200 bonus and indirect compensation; **Allen T. Chase,** dir., $3,-025 salary (down $1,293). $1,050 bonus and indir.; **Norman L. Meyers,** asst. and dir., no salary, $450 bonus and indir.; **Houston Rehrig,** dir., $3,025 salary (down $1,475), $900 bonus and indir.; **Thomas J. Sullivan,** dir. $3,025 salary (down $1,325), $1,350 bonus and indir.; **Fred Benninger,** secy.-treas., $18,-000 salary, $6,400 bonus and indir.; **W. E. Bartling,** v.p., $13,200 salary (up $2,-500), $3,000 bonus and indir.; **George T. Cussen,** v.p., $9,450 salary (up $1,450), $4,200 bonus and indir.; **Ralph B. Stump,** asst. secy.-treas., $10,700 salary (up $1,-300); **George M. Mersenger,** asst. secy., $8,425 salary.

triple threat

Changing temperatures, vibrations, and accelerations affect the operation of all instruments. In spite of these variables, our products produce the right answers because they are properly designed.

- AIRCRAFT INSTRUMENTS AND CONTROLS
- OPTICAL PARTS AND DEVICES
- MINIATURE AC MOTORS
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Current production is largely destined for our defense forces; but our research facilities, our skills and talents, are available to scientists seeking solutions to instrumentation and control problems.

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ELMHURST, NEW YORK • GLENDALE, CALIFORNIA • SUBSIDIARY OF Standard COIL PRODUCTS CO., INC.

PIONEER AIR LINES
sets a fast safe pace with the help of . . .

WE SALUTE
PIONEER PACEMASTERS!
Finest in Southwestern Transportation

Scott
AIRCRAFT OXYGEN BREATHING EQUIPMENT

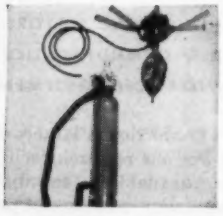
SCOTT Oxygen Demand Regulator and Mask installation is inspected by [illegible] superintendent

- A new Pioneer Airlines fleet of 270-mile-an-hour, 36-passenger Pacemasters is now serving 21 cities in the Southwest.
- SCOTT 6380 Oxygen Demand Regulators assure complete breathing protection to Pioneer flight crews in smoke or fumes. They provide 100% oxygen instantly, without use of manual controls or altitude adjustments. Used with a demand mask.

Scott Oxygen Equipment

[illegible]sable Masks reduce cost, eliminate sterilization, provide full passenger protection and comfort. Used with constant-flow oxygen systems.

SCOTT 8500 Fixed Oxygen System for all aircraft. Supplementary oxygen, plus smoke and fume protection.



Model 5500 Portable Constant Flow Type. Provides supplementary oxygen for crew and passengers at high altitude.

Model 5600 Dual-Purpose Portable Oxygen Breathing equipment. Supplementary oxygen for passenger comfort plus smoke and fume protection for crew.

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SCOTT AVIATION CORP.
212 ERIE STREET LANCASTER, NEW YORK
Export: Southern Oxygen Co., 157 Chambers Street, New York 7, N. Y.

People

MANUFACTURING

Olin E. Bragg has been elected president of Texas Metal and Manufacturing Co. Bragg was formely vice president and general manager of the firm.

Jack O. Coffey is the new aircraft sales manager of the South Wind Division of Stewart-Warner Corp., filling the vacancy created by the promotion of **W. V. Ryan** to general sales manager.

William F. Gerety has been named to replace **John J. Carson**, resigned, as director of purchasing for Kaman Aircraft Corp.

James C. Frink has been named eastern district manager of the newly consolidated marine, transportation and aviation departments of Westinghouse Electric Corp. in New York.

Roger Lewis, a vice president of Curtiss-Wright Corp., has been formally nominated to the post of assistant secretary of the Air Force. Lewis, in aviation since 1934, started first with Lockheed Aircraft Corp., moved to Canadair in Montreal in 1947, and in May 1950 joined Curtiss-Wright.

Lewis

Gaffney

Francis J. Gaffney, formerly general manager of the Polytechnic Research and Development Co., has been named director of engineering for the Guided Missles Division of the Fairchild Engine and Airplane Corp., Wyandanch, L. I., N. Y.

Lt. Gen. William E. Kepner, who retired from the Air Force Feb. 28, after 40 years of military service, has joined Bell Aircraft Corp. The company's board of directors, scheduled to meet April 6, was expected to elect Kepner to the newly created post of executive vice president.

Harold W. Hunter and **Maj. Gen. Ralph C. Royce** (USAF, Ret.), have joined American Airmotive in executive posts. Hunter, formerly vice president of manufaturing for Aeronca Aircraft, has taken over a similar post with Airmotive; and Royce has been named assistant to the president.

Joseph V. Miccio has moved up from general manager of the Electronics and Columbia Plastics Divisions of Curtiss-Wright Corp., to a vice president of the corporation. Miccio will continue to be in charge of the two divisions.

Harry E. Beane has been named vice president of sales for the Bristol Co., Waterbury, Conn. Beane joined Bristol in 1920 and prior to this latest promotion was the firm's general sales manager.

P. N. Jansen has been appointed special assistant to **W. E. Beall**, senior vice president of Boeing Airplane Co.

Herbert M. Hucke is the new staff assistant to the general manager of the Bendix Radio Division of Bendix Aviation Corp. Prior to his present post, Hucke was administrator of facilities planning in the engineering products department of Radio Corp. of America.

AIRLINES

F. E. Howe has been named to succeed **Marshall Gibbons** as vice president and treasurer of Central Airlines. Prior to this appointment, Howe was business manager of the Hawthorne School for Aeronautics, Spence Air Base, Moultrie, Ga.

D. S. Gethell, who has served in various managerial and administrative capacities since he joined Lake Central Airlines in 1949, has been appointed the line's vice president of traffic and sales.

George J. McHugh has been promoted from the post of cargo sales manager to sales manager for TACA International Airlines.

Peter B. Mellon has resigned as special representative, agency and interline sales, for Trans-Canada Air Lines to accept the post of interline and agency sales manager for Air France.

Albert C. Lin has been appointed manager of United Air Lines' oriental department, with headquarters in San Francisco. Lin, former managing editor of the *Chinese Nationalist Daily* in San Francisco, will be in charge of Oriental travel and sales in the U. S. and Hawaii.

G. R. Wilson, who joined Trans-Canada Air Lines in 1939 as a traffic representative, has been made the line's director of passenger sales.

Clay Bernard, former district sales manager for Western Air Lines in San Francisco, has been named Western's northern California regional sales manager.

Jacques Turner is the new regional manager in Miami for SABENA Belgian Airlines. In his new assignment, Turner will be responsible for the areas of Florida, Georgia, and Alabama.

L. M. Greening has joined Pacific Northern Airlines as air cargo sales manager.

The following employes have recently completed 20 years or more of service in the aviation industry.

• **James Simpson,** Douglas Aircraft Co. Vice president-general manager, Long Beach. 30 years.

• **R. O. Fortner,** American Airlines. Captain, New York. 25 years.

• **E. C. Doherty,** American Airlines. Manager inspection, M&S, Tulsa. 25 years.

• **Jack Neale,** Capital Airlines. Captain, New York. 20 years.

• **Fred Clemens,** Capital Airlines. District sales manager, Grand Rapids. 20 years.

• **A. E. Wilson,** Capital Airlines. Captain, Washington, D. C. 20 years.

• **T. Kornstedt,** Capital Airlines. District maintenance manager, Grand Rapids. 20 years.

• **R. P. Wright,** Capital Airlines. Assistant treasurer, Washington, D. C. 20 years.

• **William F. Raven,** Pan American World Airways. Assistant to the Mgr., Latin American Div., Miami. 20 years.

Facts *and figures!..*

Figure:

Nancy Boyd's peek-a-boo April raincoat proves at least two points: Dallas rain falleth (if and when it falleth) gently and mistily like an angel's kiss, and Nancy Boyd looks great in a peek-a-boo raincoat. Also, since it has taken Southwest Airmotive 21 years to fully bloom its best, we can't for the life of us figure out how Nancy got so lovely in only 16 summers. She's 5' 4", with brown hair and brown eyes. It all adds up to 110 pretty pounds.

Fact:

Anyone can pump gasoline — so it's not just pumping a lot of gas that has made Southwest Airmotive private flying's "Biggest Filling Station." It's the many special comforts and courtesies accorded those who taxi up on our 30-acre concrete Welcome Mat. We mean things like the alert, well-groomed linemen who meet you and see you off, air-conditioned lobby, coffee shop, information bureau, clean rest rooms, and courtesy car. When you gas up at SAC, you smile-up, too, with a genuine Texas gladhand

LOCKHEED "STARFIRE" SCORES WITH *Conditioned Brain Waves*

For split-second, precision operation of her radar-tracking and electronic automatic firing equipment, a high altitude all-weather interceptor must have constant pressure in her wave guides. These channels of communications between "brain" and equipment must remain properly conditioned for transmission of intelligence—a vital task performed by the Lear-Romec Pressurizing Pump illustrated.

As this jet tracks her target at supersonic speed, fresh oil-and-moisture-free air must be pumped into wave guides to maintain constant sea level pressure regardless of altitude. Originally developed for the Lockheed F-94C, the Lear-Romec Oil-less Pressurizing Pump illustrated does the job. Graphitar blades and bearings eliminate the need for lubrication, air supply is kept free of moisture by a dehydrator, and automatic maintenance of pressure is assured by an absolute pressure switch.

This and other types of pressurizing equipment made by Lear-Romec are now installed on almost every size and type of high altitude military plane using antenna wave guides and transducers.

Many new and highly specialized components for aircraft fluid systems are now available from Lear-Romec. For detailed information write for the new Lear-Romec catalog.

RG-9065 PRESSURIZING PUMP— positive displacement, rotary vane, supplies oil-free air to aircraft electronic installations to prevent arcing of hf current. ¼ h.p., 4300 r.p.m., wt. 9.3 lbs. max.

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Lear®

Advancing the Frontiers of Flight

ABSOLUTE PRESSURE SWITCHES

RADAR PRESSURIZING CONTROL PANELS

LEAR-ROMEC DIVISION

ABBE ROAD, ELYRIA, OHIO

•

LEARCAL DIVISION, LOS ANGELES, CALIFORNIA
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GRAND RAPIDS DIVISION, GRAND RAPIDS 2, MICHIGAN

OTHER LEAR-ROMEC PRODUCTS: WATER INJECTION PUMPS • FUEL FILTER DE-ICER PUMPS
LUBRICATING AND SCAVENGE PUMPS • ROTARY HAND PUMPS • AIR MOTORS • FLUID REGULATOR VALVES
AIRBORNE AIR COMPRESSORS • CENTRIFUGAL AND TURBINE PUMPS • CAMERA VACUUM PUMPS

Freight Forwarder Asks Strict Controls

Stricter enforcement of CAB regulations governing air freight forwarders was called for recently by John C. Emery, head of Emery Air Freight Corp., a CAB-authorized forwarder. Addressing a meeting of the Air Traffic Conference's cargo advisory board in Washington, Emery stated that some forwarders have "played fast and loose" and have engaged in "illegitimate practices."

The CAB regulation under which domestic forwarders were set up as a class of indirect air carriers in 1948 expires this fall. A new proceeding to determine the future of these carriers will get under way in the near future.

Commenting on this, Emery said his firm "hopes less for a certification of forwarders than for an extension of the present experiment." He added that "we'd like to see it made a little more difficult to get into the forwarding business."

The official told the airlines' group that progress in the air freight industry has been "trivial" compared to what it can be. "Your managements are not at all sold on the air freight industry. They have been preoccupied with other things that produce more revenue." He said airline operating methods need improvement and there is a big job that needs to be done in joint market research.

Although his company's revenues totalled $4.6 million in 1952, Emery said forwarders haven't done enough to justify their place in the industry. He added, however, that they haven't had a "real chance" in that cargo space on the airlines has been restricted since outbreak of the Korean war.

Braniff Hit in Free Travel Action

The CAB's enforcement office has instituted a proceeding against Braniff Airways for alleged violations of free and reduced-rate provisions of the Civil Aeronautics Act. The complaint, filed by enforcement chief Oliver Carter, charged that Braniff, since January 1, 1950, has entered into and is continuing to enter and maintain certain agreements with various persons for the exchange of air transportation for services. Some of these agreements, the complaint stated, provide for:

• **Payment by Braniff** of a specified sum per month for services, part of said sum being payable in cash and the balance in transportation.

• **Payment by Braniff** for services by furnishing air transportation only.

Also charged was that Braniff has granted and is continuing to grant free or reduced-rate transportation "to persons to whom it could not lawfully grant such transportation and who were not authorized to receive same . . ."

In some instances, it was claimed, employe passes were issued to persons who were not employes of Braniff, nor members of immediate families of employes.

Braniff will get an opportunity to answer the charges. It is alleged to have violated Sections 403(b) and 407(d) which apply to free and reduced-rate travel and accounting practices.

Action against Braniff is the fourth formal enforcement proceeding started against a certificated carrier in fiscal 1953, against three such proceedings during the same period against non-scheduled airlines.

CAB MISCELLANY

Certificate restrictions which prevented United Air Lines and Trans World Airlines from carrying local traffic between Las Vegas and Los Angeles have been relaxed by CAB. United can now serve Las Vegas-Los Angeles on flights to Denver or points east; TWA on flights to Albuquerque or east, effective May 22.

• •

Braniff Airways has asked CAB for an additional **$2.5 million in temporary** mail pay to meet break-even need in international operations from June, 1948, through February, 1953.

• •

Amos E. Heacock's non-scheduled line, Air Transport Associates, has been **turned down by the civil courts** in an attempt to upset CAB's revocation of his letter of registration. Board has given him until April 24 to wind up his affairs.

• •

Central Airlines wants a CAB exemption to carry local passengers between Ft. Worth's Meacham Field and the new Greater Ft. Worth International Airport which opens on April 26.

• •

Eastern Air Lines filed seven applications with CAB for new routes embracing **transcontinental service** between Boston, New York and Washington, on the one hand, and Los Angeles, San Francisco and Oakland, on the other.

CAB News

AS OF NOW

CAB is still aiming at getting the entire U. S. certificated industry on final mail rates by the year's end. Most of the domestic industry is now on a final rate basis. The **Trans-Atlantic Final Mail Rate Case,** involving Pan American and TWA, envisions settlement of rates in that area by November or December. Hearings in the case were just recently completed.

•

Briefs to the examiner in the controversial **Colonial Airlines Merger Proceeding** have been filed and the next step is the examiner's initial decision. Case concerns a Colonial-Eastern merger agreement and a CAB-instituted investigation considering a possible Colonial-National merger. Oral argument will probably be held in July or August with a Board decision likely late this year.

•

Mid-April is the estimated time fixed by CAB examiners for conclusion of the second round of Washington hearings in the **Large Irregular Air Carrier Investigation.** By May 1 they figure hearings will be back in Miami for a second session there. This schedule should permit the start of Los Angeles hearings sometime in June and start of Seattle hearings in the fall. Original hearings opened in Washington, D. C. on September 3, 1952.

RECENT CAB DECISIONS

• **United Air Lines** granted temporary exemption to serve Ft. Wayne and Toledo on the same flights, but not authorized to carry local traffic between the points.

• **Zanesville, Ohio,** civic groups denied reconsideration of CAB's decision to substitute Lake Central Airlines service for the trunk-line service of TWA at Zanesville.

• **Linea Aeropostal Venezolana's** application for renewal of its foreign air carrier permit between the U. S. and Venezuela consolidated by CAB for joint consideration with pending investigation of LAV's permit.

CAB CALENDAR

April 16—Hearing in Braniff Airways Final Mail Rate Case. Washington, D. C. (Docket 5142).

April 21—Oral argument before the Board in Trans-Texas Airways Segments 2 & 6 Renewal Case. Washington. (Docket 5233 et al.)

April 30—Oral argument before the Board in Wichita Falls-Dallas Service Case. Washington, D. C. (Docket 3094 et al.)

May 1—Hearing in General Passenger Fare Investigation. Washington, D. C. (Docket 5509).

June 1—Hearing in Trans-Pacific Certificate Renewal Case. Washington, D. C. (Docket 5031 et al.)

June 22—Hearing in West Coast-Hawaii Case. Washington, D. C. (Docket 5589 et al.)

AVIATION TURBO OILS
15 AND 35

The only lubricating oils pacing jet engine development

Esso Aviation Turbo Oils 15 and 35 are the only synthetic gas turbine lubricating oils in use today in substantial quantities which will stand up to the operating conditions of jet engines of enormous thrust now being developed. These oils are the direct outcome of technical research and foresight on the part of Esso aviation lubrication specialists working in close cooperation with British and U. S. aircraft engine designers and builders.

Why Synthetic Lubricants?

To meet the needs of today's gas turbine engines an oil must possess quite remarkable properties. Not merely must its viscosity-temperature characteristics be exceptional, but its pour point, flash point, volatility, high-temperature stability and load-carrying properties must all have advantages not possessed in combination by those lubricants formerly used.

The oil must permit rapid engine starting and be pumpable at very low temperatures. At the same time it must effectively lubricate the critical turbine bearings on both turbo-prop and turbo-jet engines at very high temperatures and have the ability to maintain the perfect condition of the propeller reduction gears on turbo-prop installations.

These requirements are not readily fulfilled, and cannot be met completely by a mineral oil even of the very highest quality.

But Esso Aviation Turbo Oils 15 and 35 satisfy them all.

Fully Proved Lubricants

Recognizing these facts at an early stage in gas turbine development, Esso research teams in Britain and the United States concentrated their efforts in producing synthetic oils equal to these new needs. Their results are Esso Aviation Turbo Oils 15 and 35, aircraft lubricants of proved efficiency.

E. A. T. O. 35 is now generally used in all latest types of gas turbine engines tested and flown in Britain. It is a fact that some of the latest British engines would be unable to run at full power without using E. A. T. O. 35.

E. A. T. O. 15 meeting Pratt & Whitney Aircraft specification P&WA-521A was used during the testing and development of the Pratt & Whitney Aircraft J-57 jet turbine engine and is an approved lubricating oil for this latest high-power axial-flow engine. E. A. T. O. 15 also is the only oil currently recommended for the Curtiss-Wright J-65 Sapphire jet engine for all power ratings.

For these reasons E. A. T. O. 15 and 35 are invariably used for the high-thrust jet engines now being developed in the U. S. and Great Britain – engines which have never known a mineral lubricating oil.

An Economic Investment

Gas turbine engines consume only a fractional amount of these synthetic oils per hour (less than a pint) but E. A. T. O. 15 and 35 will enable engines to maintain high power over long periods without loss of their unique properties. The cost of these lubricants – only 1/25th of the fuel bill – bears favorable comparison with the cost of oil consumed in a piston engine.

Convincing Demonstration

At the 1952 S. B. A. C. Display at Farnborough, England, the Rolls-Royce Avon engines installed in the Hawker Hunter, the de Havilland 110, the Vickers Valiant, the Supermarine Swift and the English Electric Canberra (with afterburners); the Armstrong Siddeley Sapphire engines installed in the Gloster Javelin and the English Electric Canberra, were *all* lubricated with Esso Aviation Turbo Oil 35.

Leadership in research and product development are good reasons why of all the world's international airlines, 7 out of 10 use

AVIATION PRODUCTS

International Report

Sabena Plans Passenger 'Copter Service in '54

Sabena Belgian Airlines will start scheduled international passenger, mail, and cargo operations with helicopters at the beginning of 1954. The company has ordered three Sikorsky S-55's for these services and expects to receive the first in the late summer; initially only mail and cargo will be carried. The S-55's will serve four routes linking Belgium with neighboring countries: Brussels - Liege - Cologne; Brussels - Antwerp - Rotterdam; Brussels - Lille; and Brussels-Luxembourg-Saarbrucken.

The second phase of the Sabena passenger helicopter program will involve the use of twin-engine rotorcraft carrying 15 to 20 passengers, whereas the third phase will see the operation of 50/60-passenger machines. The Belgian airline is already a veteran helicopter operator; for the past 2½ years a fleet of Bell 47D1's has been used to fly domestic mail services, and three S-51's are operated on pest control work in the Belgian Congo.

Stripped-Down Fighter

A stripped-down British fighter known as the "Gnat" is being built by Folland Aircraft Ltd. as a private venture. Powered by a Turbomeca Ossau jet, it will cruise at 690 mph at 30,000 feet. Gross weight (including two 30-mm canon) will be nearly 6,000 pounds. The delta wing will have a span of 20.25 feet and the slim fuselage will be 27.9 feet long. With a normal fuel capacity of 120 U. S. gallons, the Gnat will have an endurance of about 81 minutes.

Turbines for Qantas

Qantas Empire Airways, Australia's international airline, has decided to go for turbojet, turboprop, and turbo-compound powerplant in its equipment program for the next few years.

The carrier has stepped up its order for Lockheed L-1049E Super Constellations from three to seven aircraft (these planes will be partly financed by the sale of the company's present fleet of L-749 Constellations). Qantas will operate de Havilland Comet II's when BOAC starts using these jetliners on the London-Sydney routes.

The third type of transport to be operated will be the Bristol Britannia 300, the stretched-fuselage version of the present aircraft. This order will involve six planes and will be contingent on the prototype's performance.

France's SO 4050 Vautour is a ground attack aircraft in the supersonic class. Its long range and high speed form a combination unequalled by any other aircraft of its size. There may be a NATO requirement for an aircraft of this type when the German Air Force is revived. A second prototype will fly this summer and a third prototype will be built as a night fighter.

INTERNATIONAL BRIEFS

Canadian Pacific Airlines will introduce **Douglas DC-6B's** on its Vancouver-Sydney, Australia, service on April 28, but has not decided on future arrangements for de Havilland **Comet jetliner service** on the Sydney-Honolulu sector. The entire route is currently flown with DC-4's.

• •

The first **Vickers Viscount for Air France** recently started its flight test program. A total of **12 turboprop transports** has been ordered by the French flag carrier.

• •

The South African Air Force is to buy **Avro Shackleton patrol bombers** to replace its Short Sunderland flying boats. At one time it had planned to purchase Lockheed P2V's.

• •

The **Yugoslav Air Force** recently took delivery under MDAP of an initial batch of U. S. jet **Lockheed T-33's.** MDAP is also to supply Yugoslavia with **Sikorsky S-51 helicopters** from Westland Aircraft Ltd.'s license production; the engines will be Pratt & Whitneys supplied by the U. S. government.

• •

The **Norwegian Air Force** will receive six **Convair PBY flying boats** this spring under MDAP; they will be used for air-sea rescue purposes. **Seven Bell 47 helicopters** supplied to Norway under MDAP are being assembled in Sweden.

Japan's Toyo TT-10 Trainer, built by Toyo Aircraft Manufacturing Co., resembles the Fletcher FD-25 which the Japanese company is to build under license. Toyo hopes to sell sizeable quantities of the TT-10 to the Japan National Security Force and to nations in southeast Asia.

Letters *(Continued from page 6)*

promise.

For the state of Ohio I would like to express my appreciation for the plug, contained in your comments on the National Aircraft Show on the Ohio sesquicentennial, which is moving hand in hand with the 50th Anniversary of Powered Flight.

C. E. A. BROWN

Ohio Director of Aviation
(Member of the National Executive Committee for the 50th Anniversary of Powered Flight)
501 Wyandotte Bldg.
Columbus, Ohio.

•

THERITIZZ

To The Editor:

Re your editorial entitled "Wherizzit?", according to promotion pieces I've received from small and major airports, small and major mags, small and major associations, etc., the 50th Anniversary of Powered Flight will be celebrated most any group of days, most any group of places, and sponsored by most any group of people!

BEN BLAND

Lear, Inc.
110 Ionia Avenue N. W.
Grand Rapids, Michigan

•

COACH SENSE

To The Editor:

We at North American certainly agree with your recent editorial entitled "Does It Make Sense," which concerns expanding North Atlantic coach service. In the editorial you very wisely point out, "It is very fine to increase the traffic volume, but to do so at the expense of increasing subsidy is foolhardy."

As pioneers in the air coach field with consistent profit records without the benefits of mail pay or subsidy, we cannot comprehend how it is possible to do both simultaneously.

I should also like to take this opportunity to congratulate you and your staff for excellent reporting in the air transport field.

J. B. LEWIN

President
North American Airlines
1190 National Press Building
Washington, D. C.

•

DREAMERS

To the Editor:

It was with considerable satisfaction that we noted your editorial quotation "Day Dreaming at Collier's" in AMERICAN AVIATION for March 16. The very same day we noticed the enclosed ad in Air Force Times. Need we say more?

WILLIAM S. KARR

President
Abrams Aerial Survey Corp.
606 E. Shiawassee Street
Lansing 1, Michigan

(The ad referred to was placed by Collier's and carried the heading "Are we Killing our Fighter Pilots?"—Ed.)

•

SANE THINKING

To the Editor:

A big bouquet to you for your neat little editorial "Day-Dreaming at Collier's." We certainly need more realistic and sane thinking to keep us from running off into the ditches on either side of the road. We only waste a lot of time trying to pull ourselves out of the mud of over-pessimism or over-optimism, depending on which ditch we get bogged down in. It's a downright shame that such publications as "Collier's," which have large circulation, too often assign what seem to be frustrated fiction writers to do articles that should present a fair and square picture.

CHARLES KIRCHNER

Assistant to the President
The Kaman Aircraft Corporation
Bradley Field
Windsor Locks, Connecticut

•

CORPORATE FLYING

To the Editor:

We have just read the most excellent article in the February 16 issue of AMERICAN AVIATION, "Rynel Grew Fast With Corporate Planes," written by Lois Philmus.

It is such information as this that business America needs to develop executive flying. Unfortunately, the companies who need it most don't read aviation magazines. Therefore, we would like permission to distribute copies of it to some companies who at present have no aircraft operation (or even knowledge that it exists).

We ourselves have converted 70 or 80 DC-3's to executive use for such customers as Coca-Cola, Arthur Godfrey, RCA, Bank of Mexico, Proctor & Gamble, etc., and take some pride in our own part of the development of executive flying, having done more of this work than anyone else.

C. S. WEAKS

Advertising Manager
Remmert-Werner, Inc.
Lambert Field
St. Louis, Missouri

(AMERICAN AVIATION is glad to permit reprinting of articles, such as those that have appeared in the current series on corporate flying, providing that proper credit is given to this magazine. Requests for such reprints have confirmed our opinion that corporation flying is one of the areas of liveliest interest in the current aviation scene.—Ed.)

•

PIQUED?

To The Editor:

Mr. Wayne W. Parrish, editor of AMERICAN AVIATION, March 16, 1953, has much to say about nothing in an article written with regard to the excellent British film, "Breaking the Sound Barrier."

It seems that Mr. Parrish is extremely upset by the fact that the British producers of the film rather neglected to shout to the four winds that the U.S.A. was first to fly at and beyond the speed of sound.

To my mind Mr. Parrish cannot see the forest for the trees. I saw the picture mentioned about one month age. It was the finest portrayal of the psychological problems encountered by humans engrossed in the highly scientific field of aircraft manufacture and flight that I have ever seen, bar none.

•

This film was not a flag waver (although naturally enough the aircraft used were of British manufacture) and was not in any way used as a vehicle for the sale of aircraft and/or components. The film did portray (excellently) the conflict engendered in modern British human intellects motivated on the one hand by emotions and on the other by scientific logic. The photography was excellent and the shots of aircraft at speed and altitude were actually taken at those speeds and altitudes, which gave the viewer the deep feeling that one was right there. Truly this film should be considered one of the finest moving pictures ever to be produced by Great Britain.

Mr. Parrish's article only brought to my mind the idea that he had been reading too much of *Pravda* and is, shall we say, piqued by the British jet transport superiority of the moment and is using this excellent film on which to vent his nationalistic spleen. Of course it is realized that Editor Parrish doesn't reflect the viewpoint of one versed in the art of drama; however, I do wish to prevent any innocent reader of his article "How Was that Again?" from obtaining the wrong preconceived conception of "Breaking the Sound Barrier."

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Nantucket, Mass.

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CAPTURED THE SPIRIT

To The Editor:

Your reporting on the Alaskan airline situation has been very factual as well as fair and objective. It is perfectly obvious that you have captured the spirit behind each of the operations that you have covered.

RAYMOND I. PETERSON

President
Northern Consolidated Airlines
Anchorage, Alaska

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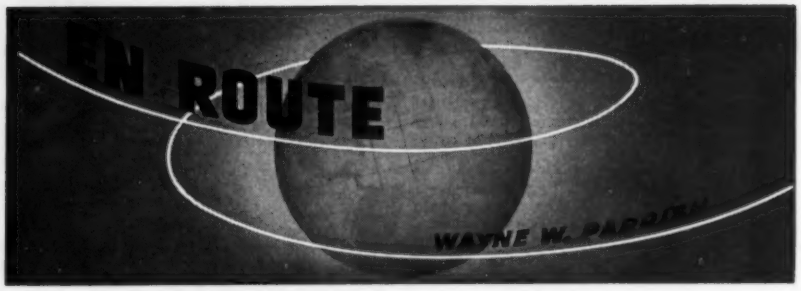

Hong Kong Party. I had such a wonderful time in Hong Kong two years ago that when I returned there last October after flying in the jet Comet from London to Singapore I decided to play host and give a cocktail party to the aviation gang which had been so hospitable to me on the first visit.

It was the first time I had ever played host in the Far East, so I had to rely on the help of **Walter Nolloth**, Hong Kong manager for Philippine Air Lines. Walter not only arranged the affair but did the inviting, so all I had to do was to show up. I wish you all could have been there—it turned into quite an affair.

The setting was the Green Room of the Peninsula Hotel in Kowloon, across the bay from Hong Kong proper. It was the first party I've ever given where barefoot Chinese coolies brought in the liquor and ice and stuff in boxes swinging from a bamboo pole riding their shoulders. The Peninsula is a strictly modern, first-class western-type hotel, but like everything else in the Far East there is plenty of Oriental atmosphere and the hotel help is in that category.

The drinks were the usual type one finds anywhere—scotch, bourbon, martinis, etc., but the food and service were much above par. Nothing like the Chinese for good service.

Cosmopolitan. The gathering was about as cosmopolitan as you could find, with thirteen airlines represented. From BOAC there were **John Linstead** and **Graham Lond.** From Pan American there were **Jerry O'Donnell, Pat Richards** and **Malcolm MacDonald.** From Scandinavian Airlines System there was **B. A. Poulsson;** from TWA, **Dave Anderson;** from Qantas Empire Airways, **R. V. Pascoe** and **Dudley Dunn;** from Canadian Pacific, **W. R. Paull;** from Thai Airways, **Bill Dudman;** from Cathay Pacific Airways, **Bill Knowles** and **Sid de Kantzow;** from Hong Kong Airways, **Ian Hutchinson.**

Civil Air Transport, of Formosa, was well represented by **Jim Brennan. Earl Willoughby** and **Wyman Donaldson. Vic Ryloff** of Air France had to meet an airplane and missed the party. **Capt. Frank Sage** of Faucett Airlines down in Lima, Peru, happened to be in town en route around the world, and attended. **A. J. R. Moss,** who was retiring as director of civil aviation, and the deputy director, **Robert Winship,** were there. So was **Jack Gethring,** of CPA, and **Guy Harden** of Aero Technical Corp. Ltd.

Including Smokey. **Smokey Stover** of Douglas Aircraft was there in all his smiling glory, and so was **Spencer Cooper** of Hong Kong Aircraft Engineering. The party ended reasonably early for some, but for others, I must report, it went on until almost dawn, thanks to Messrs. MacDonald and Dudman, who are to be avoided when you're in Hong Kong if you want any sleep.

Rivalry for air traffic in Hong Kong is very hot, but after working hours the airline gang fraternize a great deal and they get along with each other very well. It's a very friendly group.

Hong Kong continues to be one of the most fascinating spots in the world today, situated as it is on the Chinese coast surrounded on three sides by the Communists. Prices of just about everything have increased and the U. S. embargo on goods has not increased American popularity, but the natives and the Europeans seem philosophical about the situation and quite content to ride out the storm.

Tension Gone. It was amazing to me to see the change in Hong Kong in a year and a half. On the first visit there was tension everywhere, even though the European population pretended not to be aware of it. At any time the Red Chinese could have taken over the colony. But last October the tension was virtually absent. Communist sympathy in the colony had dropped to a new low. The talk was not about how long Hong Kong could last, but when South China would be liberated from the Reds.

On the surface you'd never know that enemy territory was a few miles away. The amount of new building completed and in progress was impressive. The old Hong Kong Hotel was torn down and a new 16-story hotel and office building was beginning to rise. Neon lights had increased by the thousands. Business was brisk.

One night **Bror Poulsson** and his wife, both Norwegians, gave a party for me high on the steep hill overlooking Hong Kong. Just about the whole aviation crowd was there. It was a delightful evening. For a long period of time I stood at the edge of the hilltop and looked over the teeming city and the harbor and across the ship-studded bay to Kowloon and the airport and to the Red territory beyond.

I've never seen such wonderful color combinations as the neon lights over the city. Put it down as one of the world's finest views either by day or by night, but especially at night. Even Rio de Janeiro would have a difficult time competing with it.

Star Ferry. The Star Ferry, operating every few minutes between Kowloon and Hong Kong, continues to be, to me, one of the most interesting transportation services in the world. Never, anywhere else, will you find such a cosmopolitan group of people—all nationalities, costumes, races—on those always-crowded electric ferries, and for a few cents you get a million dollars worth of scenery.

On the Kowloon side the railroad continues to operate to the border of Red China, about 18 miles away, with 11 local trains a day. In the Kowloon terminal the connecting schedule for the one daily train to Canton is listed, leaving the border station for Canton at 3 p.m. and arriving in the now-Red city at 7:48. But connecting rail traffic has declined considerably. It isn't exactly easy to cross the border.

Gingle's. **Walter Nolloth,** who is doing a top-notch job for Philippine Air Lines, took me for lunch one day to Gingle's restaurant at 70 Nathan Road in Kowloon, and I strongly recommend it.

Gingle is a 340-pound former U. S. Navy bosun's mate who retired on a pension in 1934, married a Chinese wife, and settled down to run a cafe. He is one of Hong Kong's most popular figures, gives about everything he earns to charity, and gives all of the left-over food to the poor. He runs a fine restaurant and is one of those truly generous human characters one finds occasionally around the globe. Don't miss Gingle's.

Nolloth also took me one day to the new home of **Kenneth Fung,** wealthy Chinese banker, on Repulse Bay, and what a sight it was. Mr. Fung took us all through the many-storied home on the cliffside overlooking the bay and rarely have I seen such de luxe atmosphere, such handsome taste in furnishing and decoration, and so many homey comforts. It's a dream house on a dream site. I find that people live mighty well in Hong Kong and modern architecture and modern comforts are not restricted to the U. S.

Walter Nolloth lives in a large apartment watched over by three Chinese servants. He speaks Chinese and has been in Hong Kong some thirty years and for a time was in police work. What he doesn't know about Hong Kong isn't much. Since few westerners can understand Chinese dialect he's in an advantageous position to pick up all sorts of stray information on the streets, in offices, and on the Star Ferry. Knowing the language also gives him a good inside track on selling airline tickets.

Two Holidays. I was lucky enough to be in Hong Kong during two holidays. One was the anniversary of the establishment of the Red government in China and there had been considerable speculation about demonstrations. Everything turned out to be very quiet. A few, but very few, red flags were to be seen on a few banks, stores, and homes, but nothing like the displays of the past few years. Few establishments closed.

The other holiday was the Moon Festival, which is always a gay Chinese occasion featured by widespread sale of mooncakes, which I didn't sample, and fireworks and street decorations.

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News at Deadline

CAA Cuts Budget By $60 Million

The Civil Aeronautics Administration's revised budget proposal for fiscal 1954 now asks Congress for a total appropriation of $140.9 million, a drop of $59.2 million from the Truman budget of $200 million. The high spots:

• **Elimination** of the $30 million Federal Aid to Airports program and an additional cut of $7.5 million in this program for liquidation of contract authorization.

• **A cut of $13 million** in establishment of air navigation facilities, including $7 million for liquidation of contract authorizations.

• **Remaining $6 million** sliced by CAA involves new facilities of which $4 million will involve slow-up of surveillance radar installations.

• **Air Navigation Development Board funds** are slashed $2.25 million from the original $4 million. Most affected will be ANDB's long-term airways facilities projects dropped at the outset of the Korean war and slated to be resumed in 1954.

Grumman Fighter Contract Canceled

A contract for 100 Grumman F10F-1 Jaguar jet fighters, which would have gone to the Navy, has been canceled because of the delays that would have been necessary in order to make design and configuration changes.

The F10F's featured a variable-sweep wing, which will continue to be investigated by the Navy, using a dozen of the aircraft which had previously been completed.

Grumman's backlog at the end of the year stood at well over $273 million in firm orders, plus $465 million more in letters of intent. Excess profits tax and rising costs were cited as causes for a decline in income per share from $2.73 in 1951 to $2.67 in 1952.

Sales in 1952 rose to $220 million, from 1951's figure of $167 million.

More C-119G's Ordered From Fairchild by USAF

Production of the Fairchild C-119G will run into 1956 as a result of a switch in Air Force programming. The order for more of the twin-engine, troop carrier or cargo transports followed a decision to reduce the number of Convair C-131's on order. A later order is possible for the larger Fairchild C-119H, which can be built as either a twin-engine or four-engine transport.

More Stretch-outs, Fewer Second Sources Seen

The Air Force has officially announced a stretch-out in production of the General Electric J47-25 engine at Evendale and cutbacks of one-third for the same engine at Packard, Detroit and Studebaker, South Bend.

Reports also persist that:

• **Buick's** scheduled production for the Curtiss-Wright J65 has been sharply curtailed.

• **Westinghouse** will soon receive notification of cutbacks on its J40 engine, mostly because of cancellation of most of the Grumman F10F order.

• **Boeing's** B-52 eight-jet bomber order is in the process of being reduced.

• Reductions will be made in scheduled output of the **Chevrolet** version of the Wright R-3350 Turbo Compound engine.

• Curtailed production will be ordered for the **Douglas C-118** and possibly the **Lockheed C-121** and **R7V Constellations.**

• **General Motors'** plant in Kansas City, scheduled to turn out Republic F-84F's, will be eliminated.

• Plans are still under way to bring **Lincoln-Mercury** (now slated to build the J40) and **Chrysler's** former J48 plant into the J57 licensing program under **Pratt & Whitney.**

Gurney, Dennis and Lewis Confirmed

Confirmation has come from the Senate on the nominations of Chan Gurney and Harmar D. Denny, Jr., to the Civil Aeronautics Board and John Roger Lewis as Assistant Secretary of the Air Force.

Lewis agreed to sell his 1500 shares in Curtiss-Wright Corp., and 100 shares in Phillips Petroleum.

Brazilian Line Orders Super Constellations

Three Super Connies have been ordered by the Brazilian carrier Viacao Aeria Rio Grandese (VARIG), in expectation of being granted the operating license for a New York route that was held but not used by Cruzeiro do Sul. Delivery on the $7 million order is scheduled for early 1955.

Only Brazilian carrier now serving the United States is Aerovias Brasil, which flies between Rio de Janerio and Miami.

CAB Counsel Hits EAL-CAI Merger Moves

The Eastern-Colonial merger agreement should be disapproved, according to the counsel for CAB's Air Operations Bureau, Leslie G. Donahue, who also has gone on record with the assertion that EAL has acquired control of Colonial without the prior approval of the Board and that a Colonial-National merger would be in the public interest.

Donahue saw a threat to the Board's whole merger program in the possibility that bidding contests might drive all but the richest carriers out of the merger picture. The combination of Colonial and National, he declared, would create "a greater competitive balance" in the regions involved.

TWA Hits Highest Gross But Taxes Take It

The highest gross revenue total in TWA history, $160,702,790 for 1952, was 13% greater than the previous year, but reflected only a $326 gain in net earnings after taxes, the company reports. With $6,034,000 going for federal income taxes, TWA's 1952 net earnings after taxes were $7,660,588 or $2.30 per share, as compared to $7,660,262 for 1951, also $2.30 per share.

In the annual report to stockholders, TWA Board Chairman Warren Lee Pierson and President Ralph S. Damon noted that record revenues and reduced unit operating costs in 1952 would have produced considerably more net income except for the "sharply reduced temporary mail rates established by CAB for TWA's international operations." Reference was to CAB policy of gearing temporary rates only to break-even requirements including no provision for return of investment.

G-E Jet Engine Strike Continues

Walkout of 5,600 AFL-Machinists and CIO-Autoworkers at General Electric Co.'s Evendale, Ohio, plant has gone into its fourth week with no sign of an early settlement. Federal mediators planned new sessions in hope of getting J47 production going again, but admit-

ted prospects were dim. Meanwhile, 10,000 UE-CIO workers went on strike against GE at Syracuse, tieing up vital electronics production.

French Convertiplane, SO 1310, to Fly

The SO 1310 Farfadet convertiplane is scheduled to fly this month; the initial tests will involve the helicopter properties of the model, since the 360-hp Turbomeca Artouste II turboprop has not yet been installed. The three-blade rotor is driven by tip jets fed with compressed air from a 360-hp Turbomeca Arrius II compressor.

The Farfadet, which will be used experimentally in connection with SNCA du Sud-Ouest's program to develop a 22-passenger convertiplane, will have a top speed of 150 mph and a range of 250 miles. The plane will accommodate two pilots and three passengers. Fuel for the two engines is contained in the stub wing (span, 20 feet, 8 inches).

Brazilian Airline Orders Convair 340's

Brazilian airline REAL, through the cooperation of Air Carriers Service Corp., Washington, D. C., has signed a contract to order four Convair 340's for use on its domestic system. The planes will be delivered in early 1955. REAL is to equip its entire aircraft fleet with Land-Air engine analyzers.

Ocean Freight to Hit 102 Million Pounds

Trans-Atlantic air freight will boast an annually recurring total of some 102 million pounds, according to a Columbia University economics professor, Oscar N. Serbein, Jr. Serbein made the estimate in support of Seaboard & Western's bid before the CAB for an all-cargo certificate. United States certificated lines carried 15.6 million pounds in 1951 at an average yield of 82.9c per pound.

European Avgas Requirements Rising

Avgas requirements of non-communist European and Eastern Hemisphere nations will rise almost 17% above last year's totals by 1957, reaching a peak in that year of 62,000 barrels a day, according to an estimate of the Petroleum Administration for Defense.

During January, 1953, U.S. avgas production of 100-octane and above was 6,060,000 barrels, up some 200,000 barrels over the previous month and some 600,000 over January of 1952.

No Joint Bargaining For EAL: Rickenbacker

Capt. E. V. Rickenbacker, President and General Manager of Eastern Air Lines, has denied flatly that EAL is engaged in joint bargaining with five other airlines and the International Association of Machinists-AFL. He has stated that he is opposed to the principal of joint bargaining. The weekly IAM publication, "The Machinist," had listed Eastern as being one of the carriers involved in the talks.

Brazil to Test French 'Packet'

Aerovias Brasil has been authorized by the Brazilian civil aviation authorities to operate experimentally the Nord 2501 transport, which recently carried out a demonstration tour in Latin America.

The French plane, which resembles the Fairchild C-119, will carry passengers, mail, and cargo on the airline's certificated routes. There is a likelihood that the Brazilian airline will order up to 20 Nord 2501's if the tests prove satisfactory.

There have also been unconfirmed reports that the Brazilian Air Force is negotiating an order for 20 of the planes. It is understood that the French deal will go through only if a way cannot be found for the Air Force to acquire C-119's.

Ozark Air Lines Would Buy Lake Central

Ozark Air Lines is negotiating to acquire the controlling interest in Lake Central Airlines and has filed for CAB approval of the deal, "details of which are to be filed later." Ozark also asked CAB to revoke Lake Central's certificate claiming its management is "not fit, willing and able" to meet its certificate obligations.

The stock deal, Ozark said, is being handled with the Weesner interests, holders of about 90% of LCA. LCA is being managed by a trustee-type management pending CAB action on a North Central Airlines proposal for acquisition of controlling interest. All proposals may be consolidated into one proceeding by the CAB.

New Greek Carrier To Serve U.S.

A new Greek airline to serve the United States has been formed in Athens, with the purchase of three Douglas DC-6B's scheduled in the near future. Known as Hellenic Overseas Airways Corp., the company is backed by A. S. Onassis, Greek shipowner and financier.

The company will have no connection, economic or otherwise, with the Greek government, nor with TAE National Greek Airlines, which is currently in financial straits. TAE's board of directors resigned last month and has been replaced by a temporary, government-appointed board.

Details of Slick-Tiger Merger Disclosed

Terms of the stock exchange worked out by The Flying Tiger Line and Slick Airways add interest to the proposed merger of the two leading all-cargo carriers.

Providing business is good and the future works out as anticipated, net cost to the Flying Tigers will be a dilution of the carrier's common stock by 225,000 shares. This is approximately 30% based on the 784,452 shares now outstanding, a modest dilution in return for the expansion to be netted from the consolidation.

At the same time, Slick's stockholders eventually will get back the $10 par value of their common stock in cash, and still have a substantial interest in the merged company as a reward for their eight years of dividendless investment.

On the other hand, if the merger fails to work out as anticipated, the deal will be less attractive for both sides. The equity of the Flying Tiger stockholders will be substantially lessened. The Slick stockholders would miss out on the $10 cash per share. Their equity in the consolidated company would be twice again as great, but this might still be a shrinking value.

Financing of the merger calls for the exchange of one-half share of Flying Tiger common stock and one share of a new issue of Series B 5½% convertible preferred stock with a $10 par value.

This preferred stock is callable at $10 per share during the first two years. After that the price to redeem the stock goes up $1 per year, less all dividends declared and paid, to a maximum of $15.

Meanwhile the conversion privilege can be exercised only if the company is unable to pay the 5½% dividend. But at the end of five years the hold-off on the conversion privilege is removed and the preferred then becomes convertible into common at $9.375 per share for the common.

Incentive in the deal is for the merged company to be able to redeem the 450,000 shares of preferred in the first two years before any penalties begin to apply.

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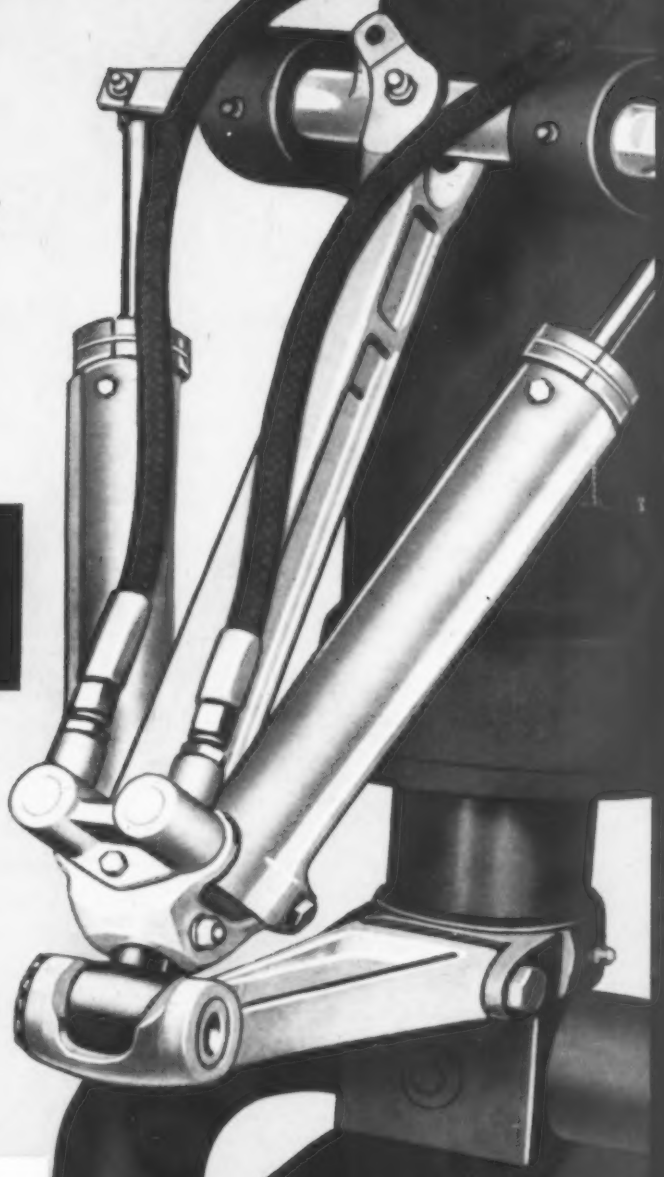

Bendix Torque Link Steering is a rugged self-contained unit which can be built in as an integral part of any nose strut.

This simple compact steering unit actually does the work of two conventional mechanisms. The hydraulic power cylinders take the place of the upper scissor member of usual torque links. They serve the double purpose of torque links and steering actuators. Thus with one unit performing dual functions Bendix Torque Link Steering obtains important savings in weight, space and maintenance.

In addition shimmy dampening is more effective because dampening forces are applied at a point where there is the least amount of spring action in the system.

Although Bendix Torque Link Steering is a new conception of more efficient steering action it has been fully tested and proved. After exhaustive laboratory tests it is now being used on several of the newer planes with excellent results.

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